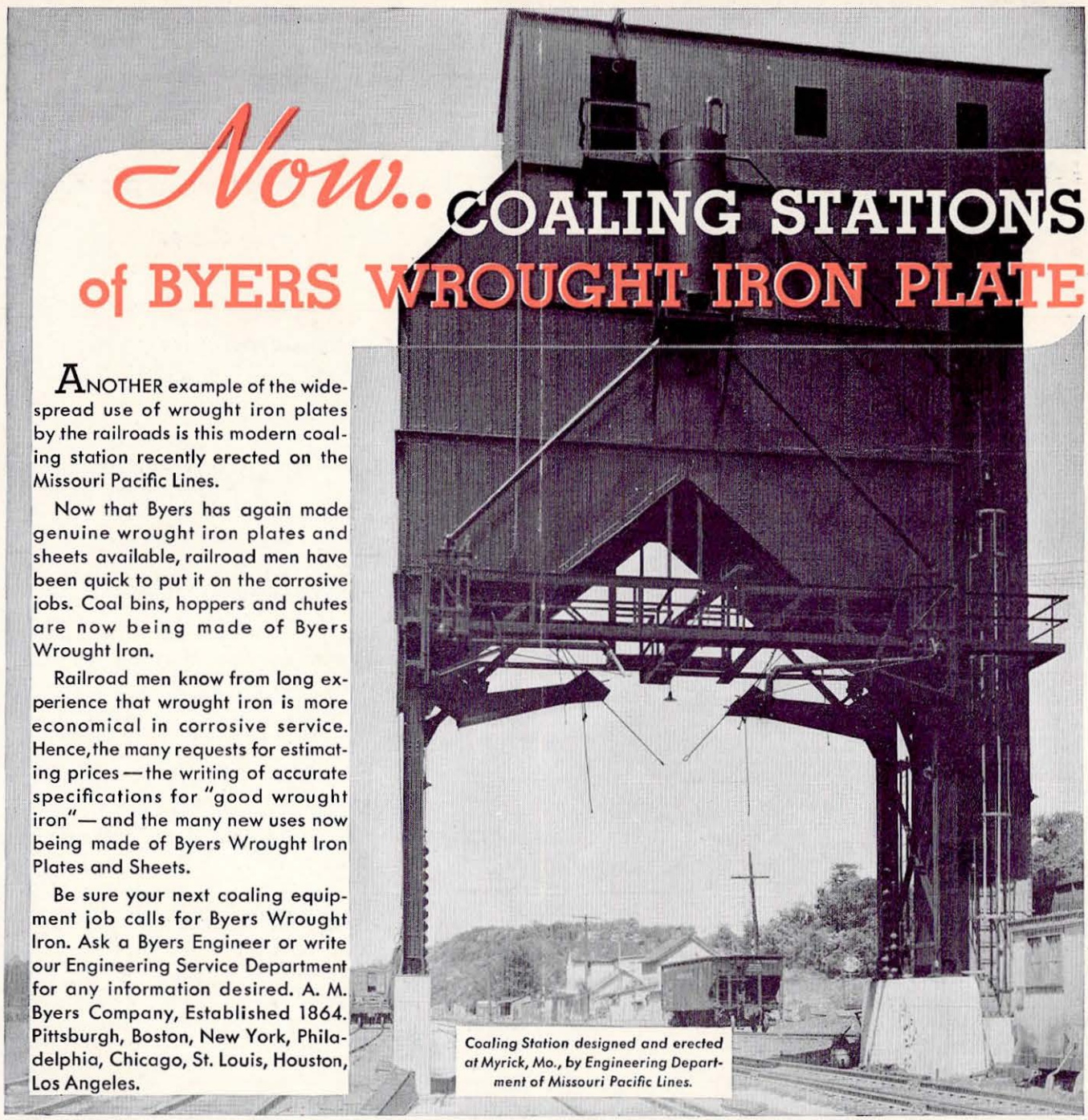
AUGUST 12, 1933

Railway Age

FOUNDED IN 1856



Now.. COALING STATIONS of BYERS WROUGHT IRON PLATE

ANOTHER example of the widespread use of wrought iron plates by the railroads is this modern coaling station recently erected on the Missouri Pacific Lines.

Now that Byers has again made genuine wrought iron plates and sheets available, railroad men have been quick to put it on the corrosive jobs. Coal bins, hoppers and chutes are now being made of Byers Wrought Iron.

Railroad men know from long experience that wrought iron is more economical in corrosive service. Hence, the many requests for estimating prices — the writing of accurate specifications for "good wrought iron" — and the many new uses now being made of Byers Wrought Iron Plates and Sheets.

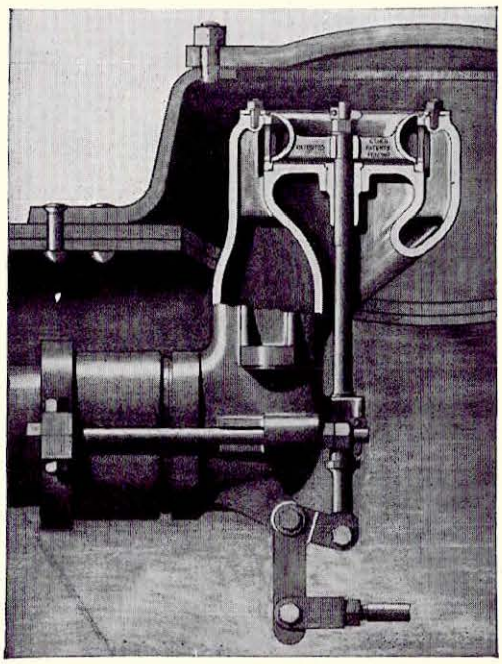
Be sure your next coaling equipment job calls for Byers Wrought Iron. Ask a Byers Engineer or write our Engineering Service Department for any information desired. A. M. Byers Company, Established 1864. Pittsburgh, Boston, New York, Philadelphia, Chicago, St. Louis, Houston, Los Angeles.

Coaling Station designed and erected at Myrick, Mo., by Engineering Department of Missouri Pacific Lines.

BYERS GENUINE WROUGHT IRON PRODUCTS

PIPE · WELDING FITTINGS · RIVETS · SPECIAL BENDING PIPE · BAR IRON
PLATES · SHEETS · CULVERTS · FORGING BILLETS · STRUCTURALS

STANDARD of QUALITY for 69 YEARS • • • TODAY BETTER THAN EVER



Glaenzer Poppet Valve Throttle can be applied in the dome as shown or in the front-end — replacing any existing throttle

WOULD A STEAM-TIGHT THROTTLE INTEREST YOU?

The Glaenzer Poppet Valve Throttle will stay tight under high pressures and temperatures

The light section of the alloy steel poppet valve permits expansion and contraction without disturbing the steam-tight seal at the valve seats.

When raised, the valve is free to rotate on the stem, giving a self-grinding action which helps to keep the valve tight under all conditions.

This steam-tight feature practically eliminates maintenance and costly repairs due to leaky throttles which often cause cracked cylinders and cylinder heads resulting in broken crank pins, etc.

The savings will pay for the new throttles many times over.

Glaenzer Poppet Valve Throttles have been applied on two railroads, operating under both superheated and saturated steam over a period of almost two years.

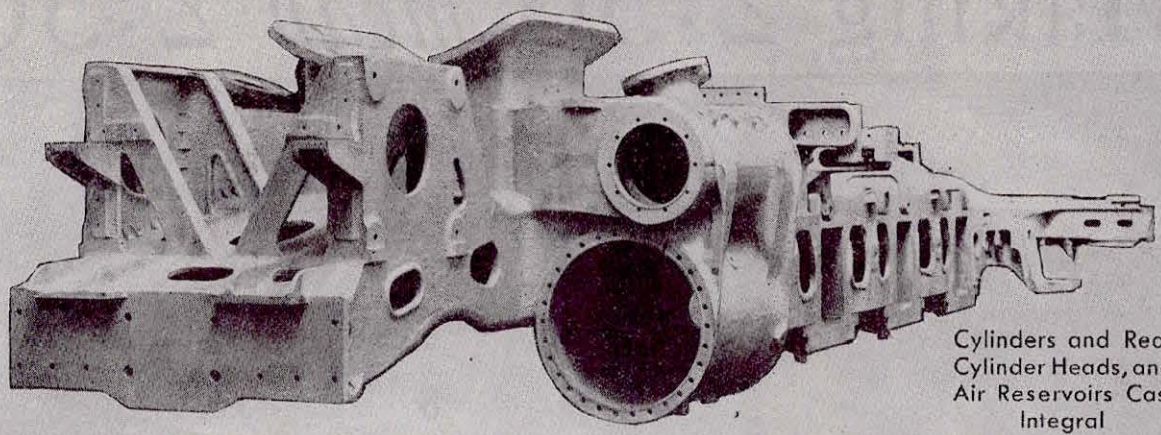
The valves have not required regrinding or servicing of any kind and have remained absolutely tight. When dismantled solely for inspection, the valve seats were found in perfect condition.

There are other points of superiority — may we tell you about them?

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879.



Cylinders and Rear Cylinder Heads, and Air Reservoirs Cast Integral

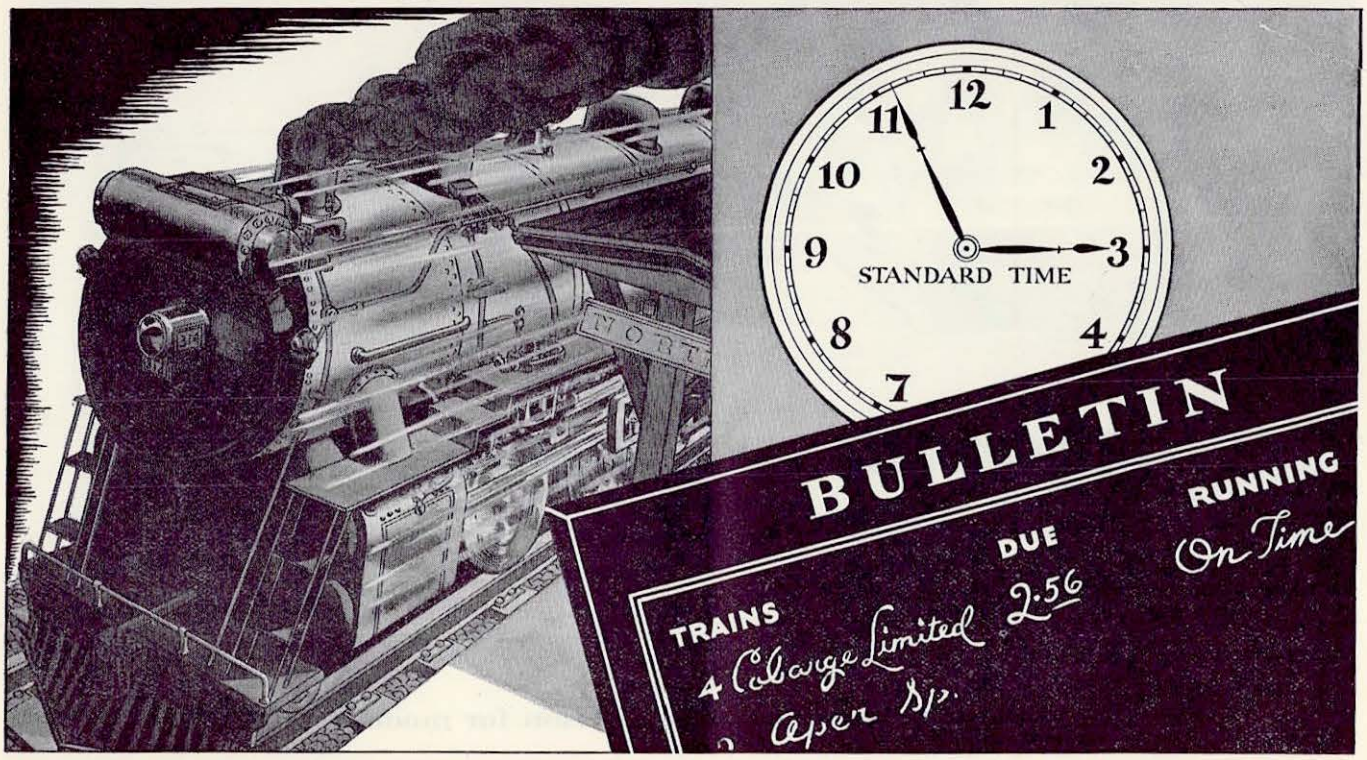
COMMONWEALTH LOCOMOTIVE BED

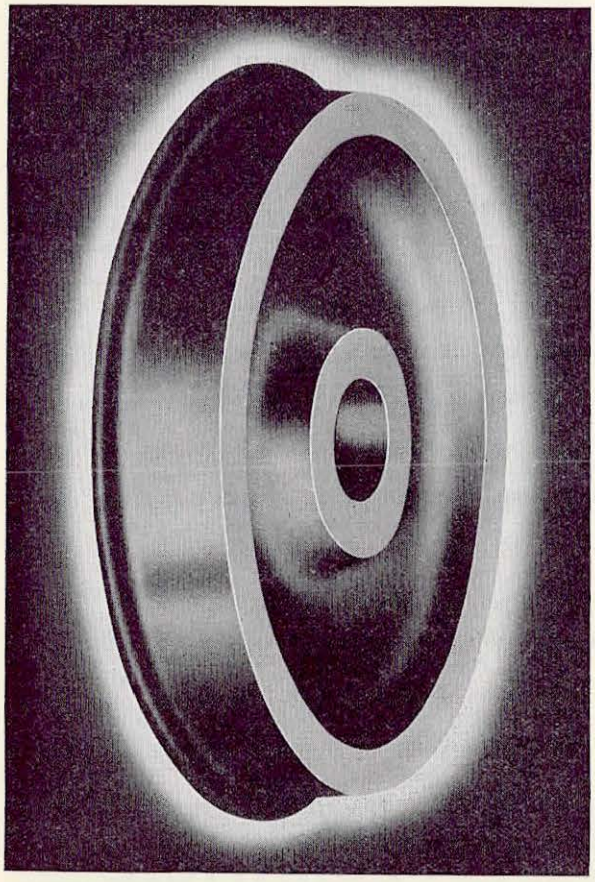
ASSURES: the necessary strong foundation for modern, efficient locomotives • Simplified locomotive design • True alignment of frame structure, cylinders, and moving parts at all times • Greater serviceability of locomotive. ¶ Commonwealth one-piece cast steel beds greatly reduce locomotive maintenance costs • There are 1300 Commonwealth beds in service on 36 railroads.

GENERAL STEEL CASTINGS CORPORATION

EDDYSTONE, PA. COMMONWEALTH PRODUCTS GRANITE CITY, ILL.

Making 2:56 *mean* 2:56





SELDOM does the passenger dream of the complex organization, the thousands of items of equipment, that have functioned perfectly to bring in his train, on time to the second.

Only the railroad man, behind the scenes, realizes the many factors on which schedule maintenance depends. The human element. Trackage. Motive power. And the wheels, that carry trains smoothly, safely, on their appointed journeys.

Bethlehem Wrought Steel Wheels—forged, rolled and finally heat-treated—have abundant stamina to meet the greater wear and tear resulting from today's higher speeds. Use them on engine trucks, on tenders, on passenger-train cars. They give thousands upon thousands of miles of safe, trouble-free service. They help to bring in trains with that split-second punctuality that warms the heart of every true railroader. Bethlehem Steel Company.

General Offices: Bethlehem, Pa.

BETHLEHEM STEEL

BETHLEHEM WROUGHT STEEL WHEELS

Published every Saturday by the Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa., with editorial and executive offices: 30 Church Street, New York, N. Y., and 105 West Adams Street, Chicago, Ill.

SAMUEL O. DUNN, *Chairman of Board*
HENRY LEE, *President*
LUCIUS B. SHERMAN, *Vice-Pres.*
CECIL R. MILLS, *Vice-Pres.*
ROY V. WRIGHT, *Vice-Pres. and Sec.*
FREDERICK H. THOMPSON, *Vice-Pres.*
GEORGE SLATE, *Vice-Pres.*
ELMER T. HOWSON, *Vice-Pres.*
F. C. KOCH, *Vice-Pres.*
JOHN T. DEMOTT, *Treas.*

CLEVELAND
Terminal Tower

WASHINGTON
17th and H Streets, N. W.

SAN FRANCISCO
58 Main St.

Editorial Staff
SAMUEL O. DUNN, *Editor*
ROY V. WRIGHT, *Managing Editor*
ELMER T. HOWSON, *Western Editor*
H. F. LANE, *Washington Editor*

B. B. ADAMS
C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. A. DOSTER
JOHN C. EMERY
H. C. WILCOX
NEAL D. HOWARD
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
M. H. DICK
S. R. HAMILTON

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues, payable in advance and postage free; United States and possessions, 1 year $6.00, 2 years $10.00; Canada, including duty, 1 year $8.00, 2 years $14.00; foreign countries, 1 year $8.00, 2 years $14.00.

Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 95 August 12, 1933 No. 7

In This Issue

French Road Extends Rail-Car Service ..... **Page 238**

A review of several types of light-weight rail motor cars with gasoline and Diesel engines—High speeds are being developed, by L. A. Glynn.

Railway Purchases Show Expansion **241**

Advance began in April and is still continuing—May exceeded April by $1,000,000—June was $3,000,000 ahead of May—July up $3,000,000 over June.

I. C. C. Refuses to Reduce Rates **243**

Says even 10 per cent cut would leave deficit after fixed charges on probable volume of traffic in 1933—Present rates, eliminating emergency surcharge only one-third higher than pre-war level.

EDITORIALS

Business Revival and the Railways 235
Employees' Magazines 237
Progress in Merchandising Railway Passenger Service 237

GENERAL ARTICLES

French Road Extends Rail-Car Service, by L. A. Glynn 238
Railway Purchases Show Expansion 241
I. C. C. Refuses to Reduce Rates 243
Freight Car Loading 247
GEO Turnout Exhibited at Chicago 248
Elisha Lee Dies Suddenly 249
The Burden of Defective Rails, by C. W. Gennet, Jr. 250

COMMUNICATIONS

As to Passenger Fares, by M. O. Lorenz 251
Scientific Examination of the Passenger Fare Level, by A. F. Stuebing 252

ODDS AND ENDS OF RAILROADING **252**

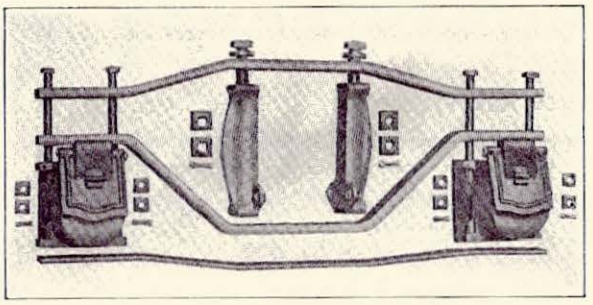
NEWS **253**

REVENUES AND EXPENSES TABLES **261**

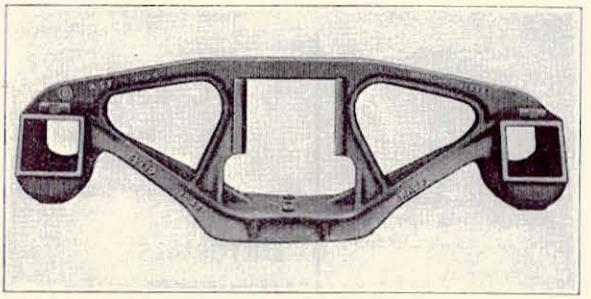
The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

ARCH BAR TRUCKS ARE EXPENSIVE TO MAINTAIN

The urge toward transportation economies involves modernization of obsolete freight cars. The arch bar truck with its 140 or more separate parts per car, was the best obtainable at the time it was installed, but in 1933 a truck utilizing a side frame made of a single integral box steel casting is required to meet modern transportation demands.



ARCH BARS
(35 Pieces)



INTEGRAL BOX SIDE FRAME
(One Piece)

Arch bar trucks under 40 and 50 ton cars are being rapidly replaced with cast steel side frames as a matter of economy.

The extremely high supervision and maintenance cost of the arch bar truck justifies, in a few years, the expense of its replacement by the one piece cast steel side frame.

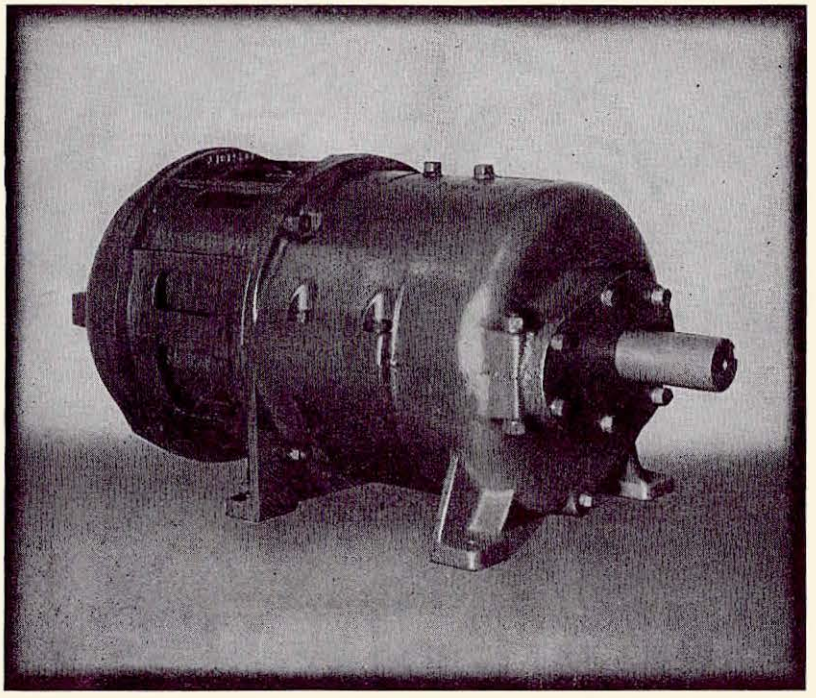
May we submit designs of cast steel side frames that will interchange with arch bar trucks now in service?

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

THEY CHANGED TO INDIVIDUAL MOTOR DRIVE—

and saved $2280 in power bills



Westinghouse Gearmotors are available in capacities from ½ to 75 hp.

One of a series of advertisements featuring self-liquidating modern improvements that many railroads are applying to reduce costs in shops, maintenance of way, and signaling operations.

IN a roundhouse of a large Eastern railroad, 11 machine tools were driven through a line shaft by a 30-hp. motor. The power bill was $2884 a year. Individual motors were applied to the machines at a cost of $1250. *This change reduced the power bill to $604* . . . saving $2280!

Line-shaft drive has outlived its day, but it still wastes money in many shops.

Why not change to individual drive and stop this *competition of obsolescence?* It will repay its cost many times over.

The Westinghouse gearmotor—a high-speed high-power-factor induction motor and reduction gear combined into a single unit—greatly simplifies the change-over from line-shaft drive. It is as easy to install as the ordinary motor alone . . . no alignments to make . . . one coupling to connect. It requires only one-half to two-thirds the space of the separate gear unit and motor drive.

Unitary Power, an exclusive feature of Westinghouse Gearmotors, eliminates the application limitations due to peak or overhung loads. The speed reducer parts are built with sufficient strength to take loads equal to the maximum torque capacity of the motor.

We invite your investigation on the basis of our ability to prove that we can save you money. Mail the coupon.

Westinghouse

Quality workmanship guarantees every Westinghouse product

SEND FOR INFORMATION

Westinghouse Electric & Manufacturing Company
Room 2-N—East Pittsburgh, Pa.

Gentlemen:

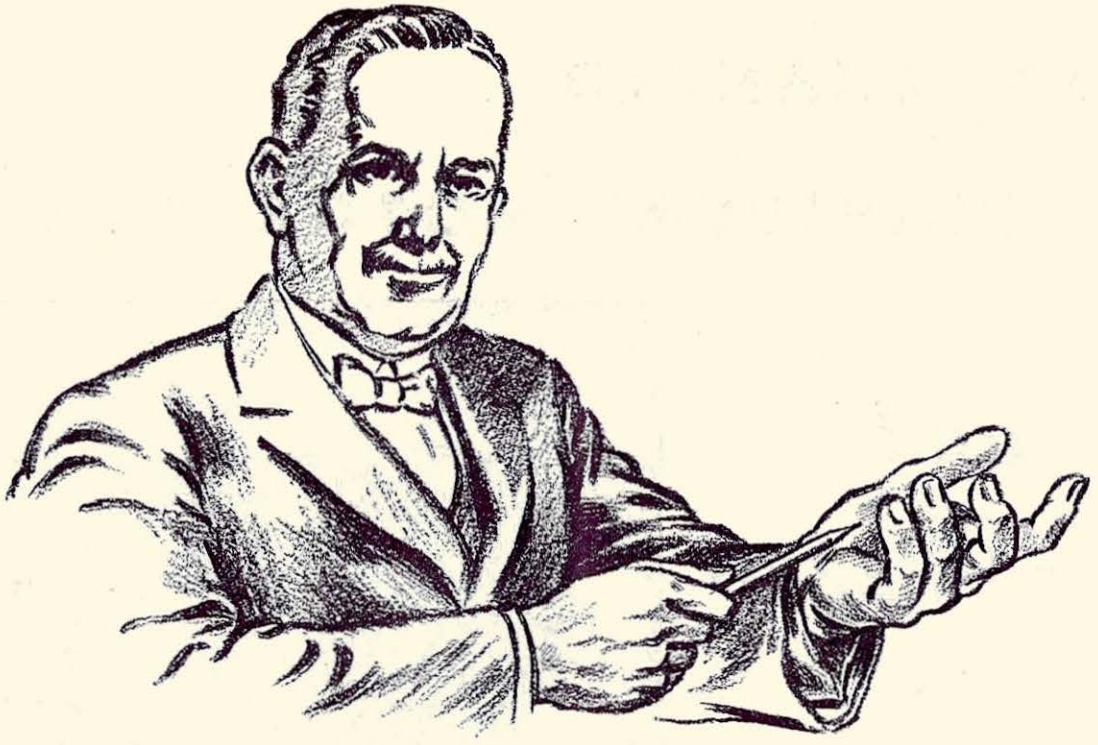
Please send me a copy of L. 20520, Westinghouse Multi-speed Drive.

Name .....

Company .....

Address ..... T 79627

City ..... *State* ..... RA 8-12-33



Universal Dry Lading Roof Economies Sum Up Like This

THIS roof consists of only 9 one-size, one-design parts and will fit all widths, all lengths, all designs of house cars on standard gage track. It is so adjustable that it does what it takes thousands of other roofs to do. It costs less to apply and practically nothing to maintain.

Its weatherproofing protects the lading against the elements and protects railroads against damage claims.

It does not require roofing boards. It allows free ventilation so that sweating is prevented in cars loaded with commodities that give off moisture.

Its weatherproof parts are made from spelter coated steel — the greatest protection against rust and deterioration.

It holds the car frame the most rigid and reduces the strain on the superstructure. The carlines, purlines, caps, saddles and flashings are rigidly secured to the car and to one another.

It does not require a big stock for maintenance and prevents delays to repairs.

And here is a splendid dollars and cents example of these economies. The maintenance on Dry Lading Roofs was only $4,519.49 for 18 years on 30,000 cars owned by the largest railroad in North America. Less than one cent per roof per year. Some record!

Hutchins Car Roofing Company

Business Revival and the Railways

The freight business of the railways, and general business as indicated by carloadings, were relatively the best in July that they had been in eighteen months, or since January, 1932. In Table 1 are given statistics showing average weekly carloadings in each month of the five years 1925-1929, inclusive, and in 1932 and the first six months of 1933. The figures show that, as compared with the five-year averages, carloadings declined throughout the first two-thirds of 1932 until in July and August they were 52 per cent less than they averaged in the five prosperous years, and then increased—allowing for seasonal variations—until in December they were only 43.2 per cent less than the five-year average. Then they declined again during the first quarter of 1933 until in March they were again almost 52 per cent less than the five-year average, and increased during the second quarter until in June they were only 43.5 per cent less than the five-year average, and further increased in July until they were only 38.4 per cent less than the average for the five-year period.

Table I—Average Weekly Car Loadings in Five Years, 1925-1929, and in 1932 and 1933

Month	1925-1929	1932	P. C. Decrease Compared with 1925-1929	1933	P. C. Decrease Compared with 1925-1929
January	901,164	567,469	37	477,624	47
February	924,622	561,331	39.3	489,495	47.1
March	957,889	570,168	40.5	460,301	51.9
April	958,402	554,578	42.1	500,949	47.7
May	1,020,466	521,939	48.9	531,960	47.9
June	1,001,905	491,589	50.9	566,345	43.5
July	1,009,839	484,427	52	621,763	38.4
August	1,077,544	516,270	52.1		
September	1,103,860	561,150	49.2		
October	1,156,391	631,621	45.4		
November	1,031,517	548,802	46.8		
December	875,258	497,366	43.2		

It will surprise most persons to be told that general business improved so much during the last one-third of 1932 that it was relatively as good in December, 1932, over two months before the banking moratorium as it was in June, 1933, over two months after the moratorium, but freight loadings are the best single measure of the total volume of business, and this is what they indicate.

The effects produced upon the gross earnings and net operating income of the railways, and especially upon the latter, by the increase in their freight traffic that occurred in the last one-third of 1932 and after March, 1933 have been remarkable. These effects have been so great partly because an increase in the number of cars loaded is usually accompanied by an increase in average loadings and earnings per car, and partly because the increases in gross earnings have not been accompanied by proportionate increases in maintenance expenditures. In Table 2 are given statistics in which average weekly carloadings, freight revenues and net operating income in July, 1932, are compared with corresponding figures for the remaining eleven months of the year ended on June 30, 1933, the percentages showing the relative increases or decreases as compared with July, 1932.

Revenue Increases Larger Than Loadings

It will be noted that almost every increase in loadings resulted in a relatively larger increase in freight revenues as well as in a relatively very great increase in net operating income. For example, in October, 1932, when the increase in weekly carloadings over July was 30.4 per cent, the increase in freight revenues was 35.7 per cent and the increase in net operating income was 450 per cent. Again, in May, 1933, when the increase in weekly carloadings over July, 1932, was 9.8 per cent, the increase in freight revenues was 15.3 per cent and the increase in net operating income was 251 per cent. In June, 1933, when weekly carloadings were about 17 per cent greater than in July, 1932, net operating income was almost 413 per cent greater. In July, 1933, carloadings were 28.4 per cent larger than in July, 1932, and it seems probable that the net operating income earned in that month ex-

Table II

Month	Average Weekly Car Loadings	Per Cent Increase or Decrease Compared with July, 1932	Total Freight Revenue	Per Cent Increase or Decrease Compared with July, 1932	Net Railway Operating Income	Per Cent Increase or Decrease Compared with July, 1932
July, 1932	484,427	....	$179,910,097	....	$11,596,852	.....
August, 1932	516,270	+6.6	194,986,752	+8.4	28,368,387	+144.6
September, 1932	561,150	+15.8	214,598,984	+19.3	49,646,867	+328.1
October, 1932	631,621	+30.4	244,074,324	+35.7	63,839,316	+450.5
November, 1932	548,802	+13.3	203,145,507	+12.9	34,179,122	+194.7
December, 1932	497,366	+2.7	188,163,759	+4.6	32,856,895	+183.3
January, 1933	477,624	−1.4	179,239,405	−0.4	13,265,722	+14.4
February, 1933	489,495	+1.0	168,790,270	−6.2	9,854,884	−15.0
March, 1933	460,301	−5.0	174,916,270	−2.8	10,548,001	−9.0
April, 1933	500,949	+3.4	180,212,394	+0.2	19,041,489	+64.2
May, 1933	531,960	+9.8	207,489,911	+15.3	40,693,073	+250.9
June, 1933	566,345	+16.9	.....	....	59,453,185	+412.7

ceeded $75,000,000, and was the largest earned in any month since October, 1930.

Two Years of Recovery—1922 and 1933

In 1922, as at present, the railways were emerging from a depression. The depression in 1921-1922 reduced their traffic and earnings more than they had ever been reduced before, but the comparative statistics given in Table 3 for the first halves of 1922 and 1933 illustrate very strikingly how much more disastrous has been the present depression than was the last. In the first half of 1933 carloadings were 34 per cent less than in the first half of 1922; gross earnings almost 46 per cent less; operating expenses almost 49 per cent less; net operating income 56 per cent less. The number of employees was 41 per cent less, and their total compensation 47 per cent less while other operating expenses were 51 per cent less.

Fortunately, in some respects the railways' prospects for the second half of 1933 are much better than they were for the second half of 1922. In the second half of 1922 they were confronted with a nationwide strike of shop employees, an increase in their traffic which caused a record-breaking car shortage, and a general reduction of their freight rates that had just been ordered by the Interstate Commerce Commission. The effects produced upon their operating expenses and earnings prevented them from benefiting substantially by the increase in their traffic and in consequence in the second half of 1922, they earned only 428 million net operating income. They are now confronted with no serious labor troubles and the Interstate Commerce Commission has just refused to order a general reduction of their rates on basic commodities. In consequence, if business continues to be during the rest of the year only as good relatively as it was in July, they should earn in excess of 500 million dollars net in the latter half of this year. Of course, however, how much net operating income they will earn will depend largely upon how much their expenditures for maintenance are increased. A large increase in net operating income is needed by most of them to cover fixed charges, and in many cases the net operating income needed cannot be earned without a continuance of severe economies.

On the other hand, the railways are among the largest employers of labor and purchasers, directly and indirectly, of manufactured products and raw materials, and failure by them to increase their employment and buying as much as they reasonably can will hinder the recovery of general business and the increase of their own traffic and gross earnings. There has been recently a slackening of the improvement in business to which is attributable the fact that while carloadings in the four weeks ended July 22, were 29 per cent greater than in 1932, they were in the week ended on July 29 only 25 per cent greater than in the corresponding week of 1932.

On August 3, Joseph B. Eastman, federal co-ordinator of transportation, sent a telegram to the presidents of all Class I railroads commending the increases in railway employment which already had been made, but adding: "A country wide drive is on to increase employment to build up purchasing power, increase production and sustain it by consumption. If all pull together this drive will succeed, but it may fail if some hang back. The railroads will gain directly and immediately if it succeeds and they have much deferred maintenance work which sorely needs to be done * * *. I strongly urge that the railroads spend every available dollar in putting men back to work and in so doing their part in the drive, they will I believe serve their own interests as well as those of the country." The sending of this telegram by Mr. Eastman almost coincided with the announcement of the decision of the Interstate Commerce Commission refusing to order a general reduction of freight rates on basic commodities.

Should Co-operate with Government

While it is essential for the railways to get a large increase in their net operating income, they can afford less than any other industry to be criticized at the present time for any failure to co-operate with the government in its efforts to promote economic recovery, in addition to which they have quite as much to gain as any other industry from the continuance of the improvement in general business. Adoption by the railroads of the policy urged upon them by Co-ordinator Eastman of increasing employment as rapidly as practicable, and also of the policy of making the increases in purchases which must accompany increases of employment, seems fully warranted under present and prospective conditions. Some parts of the government's recovery program are open to serious question, and the surest way for business leaders to forestall some proposed measures which they regard with apprehension will be to do themselves all they can to stimulate recovery by using methods of proved economic soundness and effectiveness.

Table III—Statistics of Class I Railways, First Six Months, 1922 and 1933

Item	1st 6 mos., 1922	1st 6 mos., 1933	Decrease Amount	Decrease Per Cent
Car loadings	20,020,267	13,241,718	6,778,549	33.9
Gross earnings	$2,613,676,975	$1,415,222,961	$1,198,454,014	45.9
Operating expenses	$2,080,042,002	$1,068,940,604	$1,011,101,398	48.6
Operating ratio	79.58%	75.53%	4.05	5.1
Taxes	$148,158,570	$133,629,360	$14,529,210	9.8
Net railway operating income	$349,168,979	$152,903,213	$196,265,766	56.2
Rate of return	3.86%	1.40%	2.46	63.7
Number of employees	1,593,165	937,144	656,021	41.2
Total wages	$1,259,424,262	$667,401,643*	$592,022,619	47.0
Other operating expenses	$820,617,740	$401,538,961*	$419,078,779	51.1
Average wages per employee	$790.52	$712.17*	$78.35	9.9

* Partially estimated.

Employees' Magazines

In advocating a vigorous campaign of publicity by the railroads with a view to more fully informing the public about railroad problems and policies, and thus curbing any tendency toward government ownership, F. J. Lisman, in an article in the *Railway Age* of August 5, urged the necessity of securing the more active co-operation of the employees. Few demonstrations have been more dramatic or spectacular than the way in which railway employees throughout the greater part of the country within the past year or two have enthusiastically organized railway employees' and taxpayers' associations in order to bring the plight of the railways to the attention of the state legislatures and secure relief from unfair competition on the part of unregulated types of carriers.

This movement was conceived by the workers and has largely been promoted by them. Why? Because they saw their jobs slipping away, and a little study and observation quickly and clearly showed the unfairness of the conditions which confronted their employers. Second, for years, in order to secure intelligent and cordial co-operation from the employees, most of the railroads have taken considerable pains to keep them informed about their operating, traffic and public relations problems. One of the best mediums for this has been the employees' magazine.

The depression has put many of these magazines out of business. The Industrial Relations Section of Princeton University recently published a survey of employee magazines in the depression. It indicated that while 415 such magazines were published in 1929, as many as 208, or 50.1 per cent, had been discontinued before December 31, 1932; of these 55 were reported as temporarily suspended. Naturally, most of those which were not discontinued were reduced in size, or radical changes were made to cut down expenses. The report shows that in 1929 railroads and ship lines published 44 such magazines, 19, or 43.1 per cent, of which were discontinued; this is considerably less than the percentage for the employees' magazines as a whole, as noted above. The greatest mortality was suffered by the employees' magazines for stores, 61.7 per cent being discontinued. This group was closely followed by the manufacturing industry, in which 60.6 were discontinued. Next in order came the banks, with a percentage of 52.9. The public utility field made a good showing, even better than that of the railroads and ship lines; of the 92 employees' magazines published in that field, only 34 were discontinued, or a percentage of 36.9.

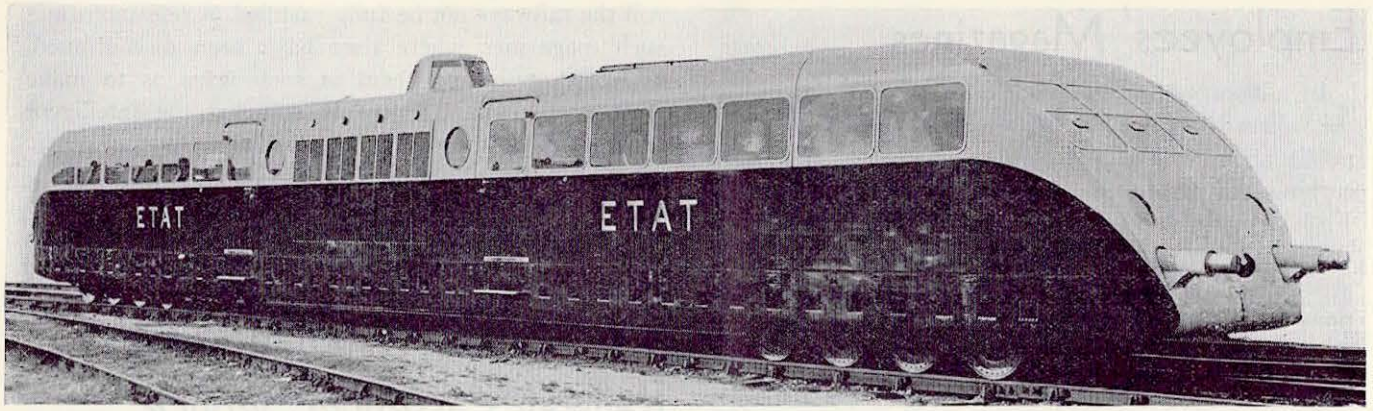
The railroads, as pointed out by Mr. Lisman, are facing a serious situation and will need the intelligent co-operation and effort of every employee to insure that the public is fully and rightly informed as to the difficulties under which the railroads are operating. Does not the employees' magazine offer exceptional opportunities for stimulating such co-operation, and will the railways not be fully justified in re-establishing such magazines where they have been discontinued, or of strengthening them in such ways as to make them even more effective in securing the intelligent and hearty interest of the employees in the public relations problems of the railways?

Progress in Merchandising Railway Passenger Service

On Monday and Thursday evenings, as most of our readers know, the railroads are broadcasting a radio program on a nation-wide hook-up, the purpose of which is to stimulate passenger traffic to the Century of Progress exposition at Chicago. Radio advertising by railroads is no novelty, several individual lines having availed themselves of this medium of publicity. The remarkable characteristic of the present program, therefore, is not that the radio is used, but that it is a joint effort participated in by both eastern and western lines. The hearer is urged, not to travel to the exposition by any particular railroad, but rather to travel by rail than by some other means of transport.

There is cogent logic behind this method of approach to the problem of reviving passenger traffic. The passenger revenues of the X. Y. & Z. railroad are low today, not because the business has deserted it for the A. & B., but because the passengers are traveling by bus, by air or in private automobiles. Is it not entirely logical, therefore, that the principal sales effort of both the X. Y. & Z. and the A. & B. should be directed, not toward taking passengers from each other, but toward winning them back from other transportation agencies? And since a sales campaign of this kind can be conducted more efficiently and widely as a joint enterprise, is not the precedent established by the present campaign one which should be followed consistently hereafter, not only on the radio, but in newspaper and magazine advertising as well? This does not, of course, mean that advertising by individual lines should be abandoned, but rather that increasing emphasis should be laid on joint efforts to sell railroad service in general.

There are other instances of joint advertising which deserve attention, among them notably the Century of Progress campaign in eastern newspapers being conducted by the New York Central, the Baltimore & Ohio and the Pennsylvania. The passenger traffic officers of the railroads have of late made great progress in developing a merchandising attitude toward their business. While undoubtedly there is room for still further improvement along such lines, it is apparent that progress—rapid progress—is being made, and those who are contributing to it deserve recognition and thanks from the whole railroad industry.



Streamlined Bugatti Car for the French State Railways—Length, 76 Ft.; Weight (Approximate), 25½ Tons; 800 Hp.

French Road Extends Rail-Car Service

A review of several types of light-weight rail motor cars, powered with gasoline and Diesel engines, recently purchased by the State Railway

By L. A. Glynn

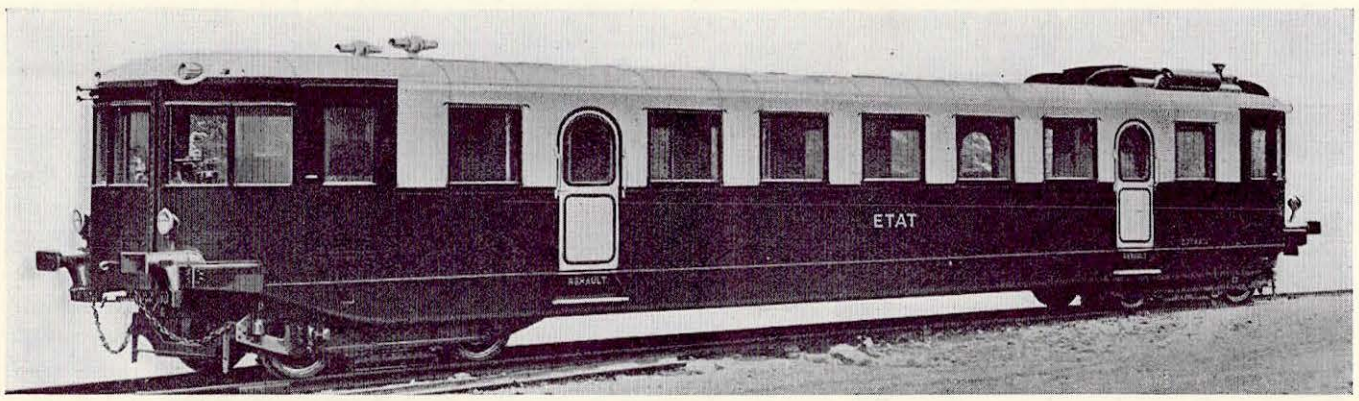
FRENCH railroads are planning to make extensive use of the automotive rail cars in order to meet the growing competition of motor transport on the highways. The chronic deficit in railroad earnings, due largely to road transport competition, is forcing this solution of the problem on the attention of the railroads and their efforts are encouraged by the government as the deficit must ultimately be covered by the national budget.

For some years the French lines have experimented with rail motor cars for passenger traffic and the results achieved are likely to lead to legislative measures modifying the old restrictions placed upon the railroads and encouraging the general adoption of light automotive cars to replace or supplement the heavy steam trains. This is particularly true on branch lines in country districts where trains frequently run almost empty, the law compelling the companies to provide three passenger trains daily in each direction.

In France the railroads are at present experimenting with 120 rail motor cars of 20 different types. This gives an idea of the importance attached to this new development in railroad passenger traffic and of the extension it is likely to see in the next few years. Many of these new types of cars were placed on view by the French State Railways at the St. Lazare station, the Paris terminus, during the third week in May. The exhibition, which attracted thousands of people, was organized by Raoul Dautry, the director general.

Faster Than the "Flying Hamburger"

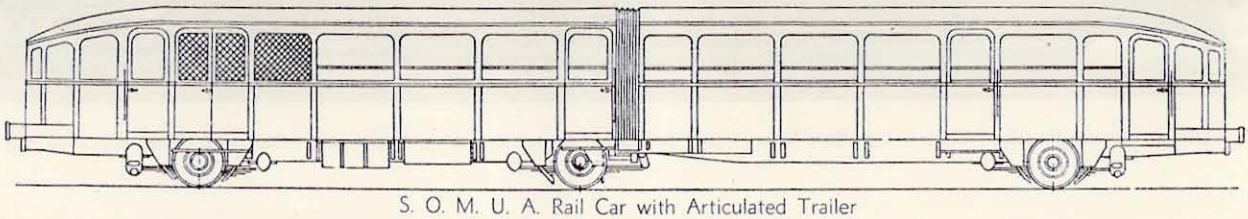
Special interest centered in the new fast Bugatti car, which made its trial runs recently at Le Mans and on May 5 attained a speed of 107 m.p.h, thus beating the record of the German "Flying Hamburger" which is capable of attaining a speed of 100 m.p.h. In the test runs the Bugatti car was driven by Jean Bugatti, the son of Ettore Bugatti, the famous motor-car designer. The car was built in the Bugatti workshops at Molsheim in Alsace. Many novel features are embodied in its construction. It has a streamline design, based on the results of experiments with a model in the aerodynamic laboratory at Issy, near Paris. Mounted on eight-wheel trucks, it is so constructed that a vertical or lateral dis-



Large Renault Rail Motor Car Seating 56 Passengers—Length, 62 Ft. 4 In.; 300 Hp.; Speed, 75 M.P.H.

placement of any axle gives a displacement of the center plate only one-fourth the displacement of the axle, thus rendering the car particularly stable and flexible. It has a capacity of 800 hp., being driven by four 200-hp. Bugatti motors. The fuel is an alcohol-benzol mixture.

A striking feature of the Bugatti car is that it has no gear box or clutch, the motors being connected through an intermediary gear and reversing box to a drive shaft, which transmits the power to the two inside axles of each truck. Although this car is not fitted with pneumatic tires, rubber is very largely used to suppress the transmission of vibrations. The wheels have steel tires, but they are rendered elastic by rubber bands placed between the tire and the hub. Rubber pads are also placed between the chassis and the body and between the truck and center plate. The rail car is reversible. It may be driven in either direction. The driver's cab, as well as the engines, is placed in the middle of the car and it has a glass hood, or conning tower, giving a clear view in either direction along the line. As a result of this arrangement the passengers have also an unobstructed view of the line and the surrounding country through the windows at the ends of the car, as well as through the windows at the sides. There are seating accommodations for 52 passengers. The seats are also reversible, being easily tilted over so that the passengers always face the direction in which the car is traveling. The car is fitted with Timken roller bearings.



S. O. M. U. A. Rail Car with Articulated Trailer

70 M.P.H. Paris to Seashore

During the summer season the Bugatti cars will assure a daily service between Paris and Deauville, the famous seaside resort in Normandy. They are scheduled to make the trip of 138 miles in two hours, thus maintaining an average speed of nearly 70 m.p.h. The express trains on this service last year did the run in 2 hr. 28 min. Besides saving 28 min. in time the Bugatti cars will represent a great economy in comparison with the cost of running the heavy express trains. During the rest of the year these cars will be used in the boat-train service between Cherbourg and Havre, meeting the smaller transatlantic liners and bringing the passengers to Paris on fast schedules.

Among other interesting exhibits at the St. Lazare station was the 1933 type of Micheline cars fitted with pneumatic tires. These cars are now being delivered to the State Railways and also to the Eastern Railway. The car gives comfortable seating accommodations for 36 passengers and has a baggage compartment. It is reversible; the driver's cab, placed at one end of the car, is elevated to give him a view of the line in either direction from a glass hood on the roof. Hot air, heated by exhaust gases from the motors, is used to warm the car. Hydraulic brakes are applied to each wheel. The car is designed for a speed of 65 m.p.h. Micheline cars have been in use during the past year to accelerate the express service between Argentan and Granville, another Normany seaside resort. It is found that the pneumatic tires will last on an average for more than 20,000 miles.

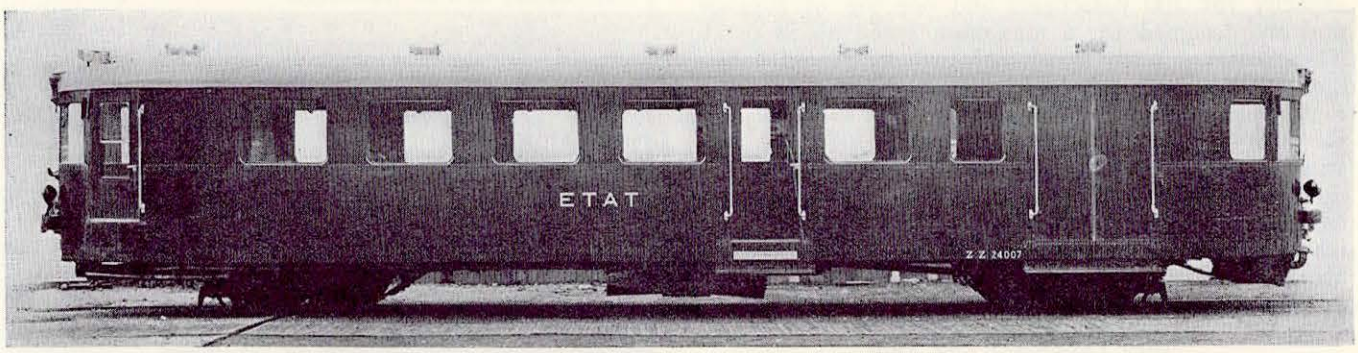
Rubber Between Steel Tires and Wheel Centers

Four new Renault cars with seating accommodation for 36 passengers have just been delivered to the State Railways and the first car of the latest 1933 type to seat 56 has also been received. It has baggage and postal compartments. The wheels are elastic with steel tires, but with rubber placed between the tires and wheel centers.

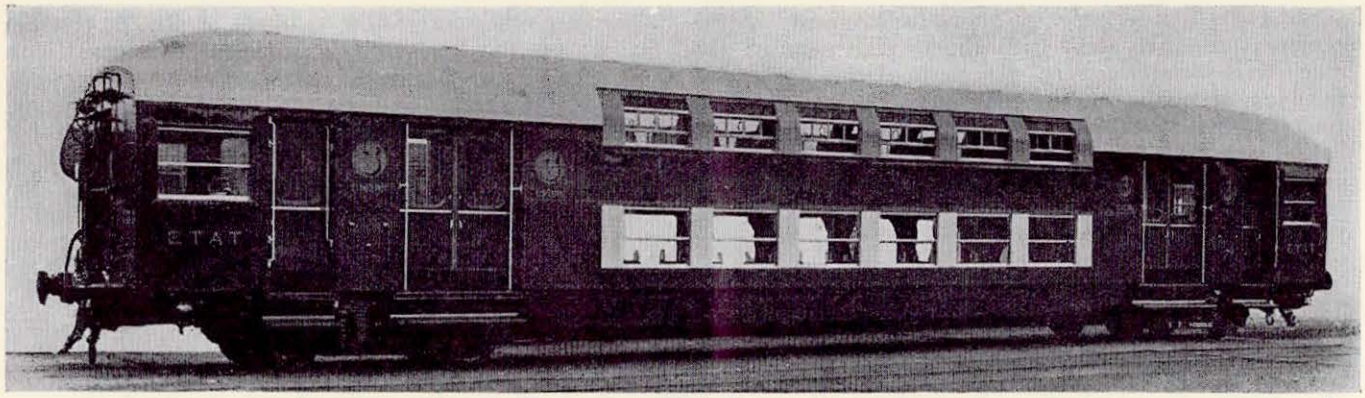
In addition to air brakes, the cars have electro-magnetic brakes, an iron shoe actuated by an electro-magnet being applied directly to the rail giving great retardation and obviating wear of the wheels. The newest car has a 12-cylinder V-type Diesel engine. The car is reversible but with a driver's cab at each end.

Trucks Dispensed With

The State Railways are also now taking delivery of four rail cars built by the Enterprises Charentaises. They are of the same type as those in use on the Midi lines in the south of France. Aluminum and its strong alloys are freely used in the construction, so that the cars are very light with a tare weight of 10½ tons for 55 passengers. As conducive to lightness, trucks have been dispensed with and the body mounted directly on four axles grouped in pairs, power being applied to the two inside motor axles. They are driven by an 80-hp. three-cylinder Diesel motor. The car is reversible with a

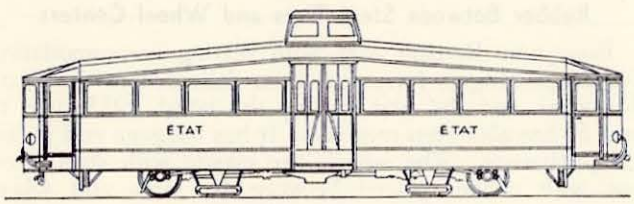


Charentaise Light Diesel Motor Car—Maximum Speed, 90 M.P.H.



Double Decked Coach for Use in Paris Suburban Steam-Train Service—Approximate Weight, 53 Tons—Roof and Walls Insulated with Alfoi

driver's compartment at each end. Hydraulic brakes are applied to the eight wheels. It may be pointed out that the Midi Company intends to use its high-speed rail cars to supplement express trains. The cars will follow the expresses, picking up passengers at intermediate stations and transferring them to the express at its first stop. Passengers dropped by the express will then be carried



Rail Motor Car Built by the Compagnie de Generale Construction

on to intermediate stations and others picked up for transfer to the express when this is overtaken by the high-speed rail car at the next stop. This system will virtually give the long-distance express an advantage equivalent to stopping at every station.

The twin rail cars, known as the S.O.M.U.A. because of their being built by the Societe d'Outillage Mecanique et Usine d'Artillerie, are to run on the State Railway lines this year. They are Diesel engined, with capacity for 100 passengers and one ton of baggage, and are designed for a maximum speed of 55 m.p.h. These coaches really consist of two articulated bodies. The leading car body, fitted with a six-cylinder Diesel motor, has two axles. It hauls a trailer with one axle, the trailer being coupled up by means of a friction plate with a device limiting the lateral displacement. This articulated construction obviates the use of trucks. The car interiors are connected by a vestibule. The train may be driven from either end, the motor manipulations being effected by compressed air with lamps beside the driver indicating that they have been carried out.

Give Passengers End View

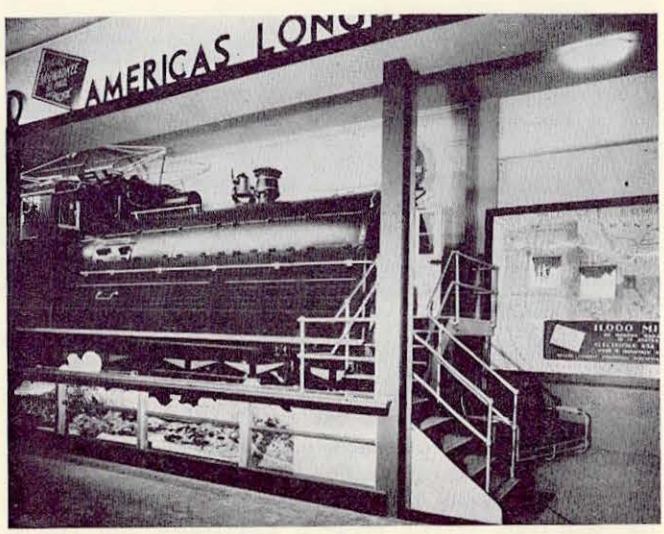
Among other interesting cars to be run by the State Railways this year are those built by the Compagnie Generale de Construction. They are driven by M.A.N. Diesel motors of six cylinders and 140 hp. The cars are fitted with SKF roller bearings and oil-pneumatic brakes, as well as hand brakes and also an emergency electro-magnetic skid brake applied directly to the rail. Weight of the car in running order is 13½ tons and the speed 55 m.p.h. on the level. Two sunken platforms will carry a ton of baggage without obstructing the view of passengers through the end windows over the surrounding country. The driver's compartment is in the middle of the car with elevated lookout. The car has accommodations for 64 passengers (44 seated, 20 standing). The chassis is entirely arc welded.

Double-Decked Steam-Train Cars

A striking innovation in railroad cars is a double decked coach which has been built for use on the Paris suburban lines in the steam-train traffic. The commuter traffic is so intense that it has become a necessity to increase the carrying capacity of the cars. Double deckers, known as the "Imperial," with seats on the roof where passengers became begrimed with smoke and dust, were long a curious feature of the Paris lines. The new cars have nothing in common with that obsolete type. They are of elegant construction with comfortable seating accommodation. The lower deck is on a sunken floor, so that the passenger entering the car goes down two steps. The upper deck is reached by a gangway of half a dozen broad steps inside the car. Nickel-chrome steel of high resistance is utilized in these cars. They have SKF roller bearings and Westinghouse brakes. The car at capacity will carry 280 passengers.* Trains are to be composed of eight cars and are capable of carrying 2,040 commuters.

* The third-class coach has seats for 128 persons and standing room for 160. The combined first and second-class coach seats 122 and provides standing room for 106.—EDITOR.

* * *



A Section of the Chicago, Milwaukee, St. Paul & Pacific's Exhibit at the Century of Progress Exposition

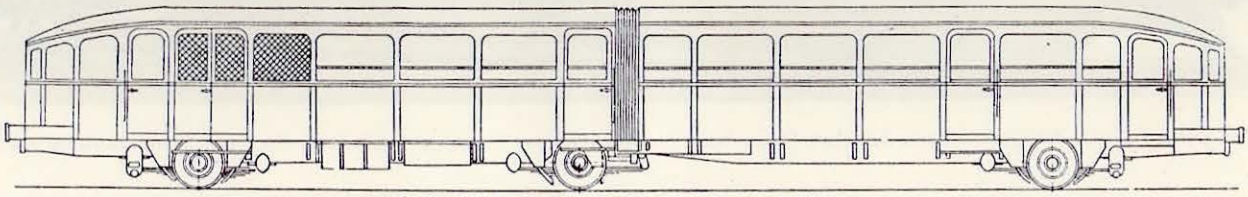
placement of any axle gives a displacement of the center plate only one-fourth the displacement of the axle, thus rendering the car particularly stable and flexible. It has a capacity of 800 hp., being driven by four 200-hp. Bugatti motors. The fuel is an alcohol-benzol mixture.

A striking feature of the Bugatti car is that it has no gear box or clutch, the motors being connected through an intermediary gear and reversing box to a drive shaft, which transmits the power to the two inside axles of each truck. Although this car is not fitted with pneumatic tires, rubber is very largely used to suppress the transmission of vibrations. The wheels have steel tires, but they are rendered elastic by rubber bands placed between the tire and the hub. Rubber pads are also placed between the chassis and the body and between the truck and center plate. The rail car is reversible. It may be driven in either direction. The driver's cab, as well as the engines, is placed in the middle of the car and it has a glass hood, or conning tower, giving a clear view in either direction along the line. As a result of this arrangement the passengers have also an unobstructed view of the line and the surrounding country through the windows at the ends of the car, as well as through the windows at the sides. There are seating accommodations for 52 passengers. The seats are also reversible, being easily tilted over so that the passengers always face the direction in which the car is traveling. The car is fitted with Timken roller bearings.

70 M.P.H. Paris to Seashore

During the summer season the Bugatti cars will assure a daily service between Paris and Deauville, the famous seaside resort in Normandy. They are scheduled to make the trip of 138 miles in two hours, thus maintaining an average speed of nearly 70 m.p.h. The express trains on this service last year did the run in 2 hr. 28 min. Besides saving 28 min. in time the Bugatti cars will represent a great economy in comparison with the cost of running the heavy express trains. During the rest of the year these cars will be used in the boat-train service between Cherbourg and Havre, meeting the smaller transatlantic liners and bringing the passengers to Paris on fast schedules.

Among other interesting exhibits at the St. Lazare station was the 1933 type of Micheline cars fitted with pneumatic tires. These cars are now being delivered to the State Railways and also to the Eastern Railway. The car gives comfortable seating accommodations for 36 passengers and has a baggage compartment. It is reversible; the driver's cab, placed at one end of the car, is elevated to give him a view of the line in either direction from a glass hood on the roof. Hot air, heated by exhaust gases from the motors, is used to warm the car. Hydraulic brakes are applied to each wheel. The car is designed for a speed of 65 m.p.h. Micheline cars have been in use during the past year to accelerate the express service between Argentan and Granville, another Normany seaside resort. It is found that the pneumatic tires will last on an average for more than 20,000 miles.



S. O. M. U. A. Rail Car with Articulated Trailer

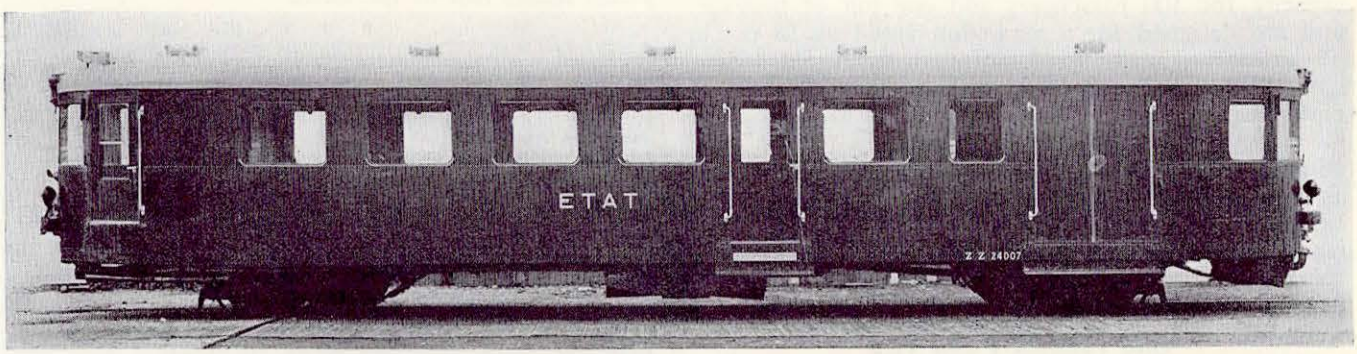
Rubber Between Steel Tires and Wheel Centers

Four new Renault cars with seating accommodation for 36 passengers have just been delivered to the State Railways and the first car of the latest 1933 type to seat 56 has also been received. It has baggage and postal compartments. The wheels are elastic with steel tires, but with rubber placed between the tires and wheel centers.

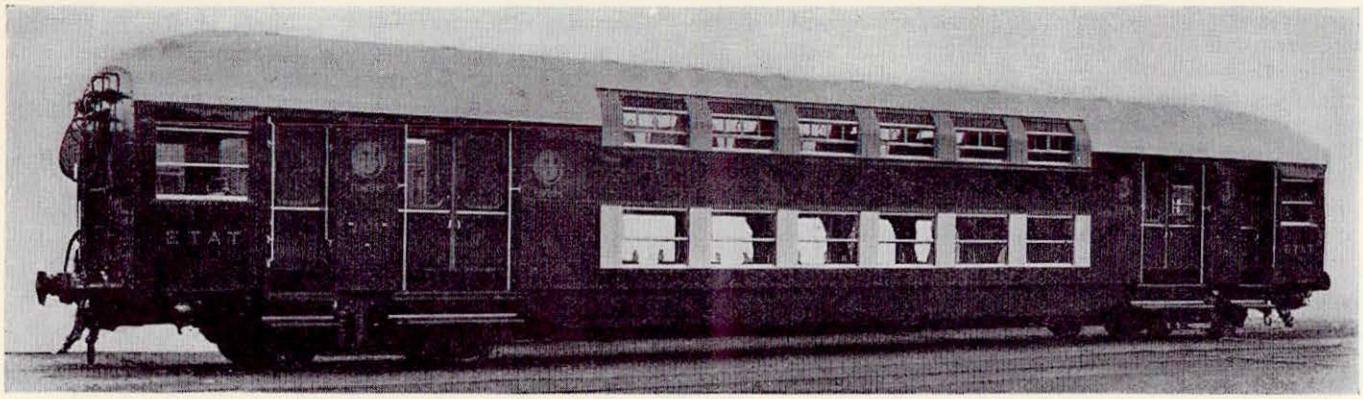
In addition to air brakes, the cars have electro-magnetic brakes, an iron shoe actuated by an electro-magnet being applied directly to the rail giving great retardation and obviating wear of the wheels. The newest car has a 12-cylinder V-type Diesel engine. The car is reversible but with a driver's cab at each end.

Trucks Dispensed With

The State Railways are also now taking delivery of four rail cars built by the Enterprises Charentaises. They are of the same type as those in use on the Midi lines in the south of France. Aluminum and its strong alloys are freely used in the construction, so that the cars are very light with a tare weight of 10½ tons for 55 passengers. As conducive to lightness, trucks have been dispensed with and the body mounted directly on four axles grouped in pairs, power being applied to the two inside motor axles. They are driven by an 80-hp. three-cylinder Diesel motor. The car is reversible with a

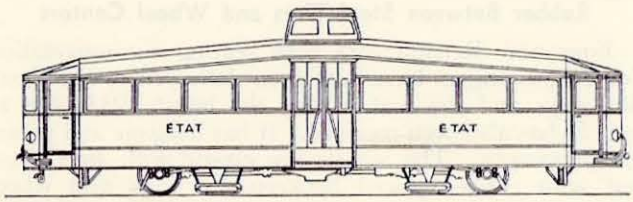


Charentaise Light Diesel Motor Car—Maximum Speed, 90 M.P.H.



Double Decked Coach for Use in Paris Suburban Steam-Train Service—Approximate Weight, 53 Tons—Roof and Walls Insulated with Alfol

driver's compartment at each end. Hydraulic brakes are applied to the eight wheels. It may be pointed out that the Midi Company intends to use its high-speed rail cars to supplement express trains. The cars will follow the expresses, picking up passengers at intermediate stations and transferring them to the express at its first stop. Passengers dropped by the express will then be carried



Rail Motor Car Built by the Compagnie de Generale Construction

on to intermediate stations and others picked up for transfer to the express when this is overtaken by the high-speed rail car at the next stop. This system will virtually give the long-distance express an advantage equivalent to stopping at every station.

The twin rail cars, known as the S.O.M.U.A. because of their being built by the Societe d'Outillage Mecanique et Usine d'Artillerie, are to run on the State Railway lines this year. They are Diesel engined, with capacity for 100 passengers and one ton of baggage, and are designed for a maximum speed of 55 m.p.h. These coaches really consist of two articulated bodies. The leading car body, fitted with a six-cylinder Diesel motor, has two axles. It hauls a trailer with one axle, the trailer being coupled up by means of a friction plate with a device limiting the lateral displacement. This articulated construction obviates the use of trucks. The car interiors are connected by a vestibule. The train may be driven from either end, the motor manipulations being effected by compressed air with lamps beside the driver indicating that they have been carried out.

Give Passengers End View

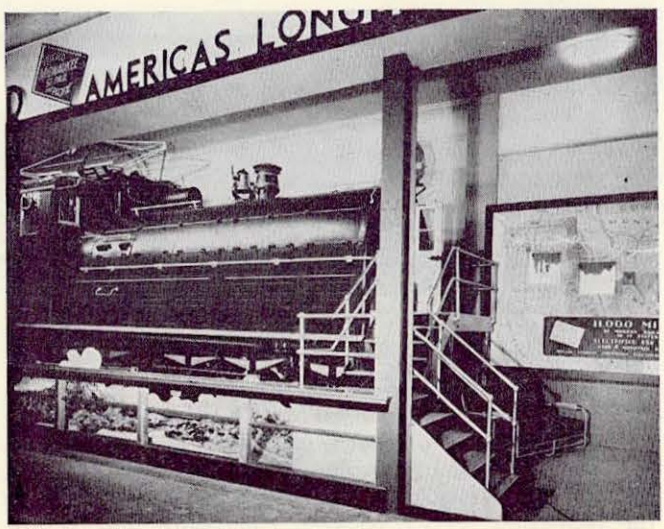
Among other interesting cars to be run by the State Railways this year are those built by the Compagnie Generale de Construction. They are driven by M.A.N. Diesel motors of six cylinders and 140 hp. The cars are fitted with SKF roller bearings and oil-pneumatic brakes, as well as hand brakes and also an emergency electro-magnetic skid brake applied directly to the rail. Weight of the car in running order is 13½ tons and the speed 55 m.p.h. on the level. Two sunken platforms will carry a ton of baggage without obstructing the view of passengers through the end windows over the surrounding country. The driver's compartment is in the middle of the car with elevated lookout. The car has accommodations for 64 passengers (44 seated, 20 standing). The chassis is entirely arc welded.

Double-Decked Steam-Train Cars

A striking innovation in railroad cars is a double decked coach which has been built for use on the Paris suburban lines in the steam-train traffic. The commuter traffic is so intense that it has become a necessity to increase the carrying capacity of the cars. Double deckers, known as the "Imperial," with seats on the roof where passengers became begrimed with smoke and dust, were long a curious feature of the Paris lines. The new cars have nothing in common with that obsolete type. They are of elegant construction with comfortable seating accommodation. The lower deck is on a sunken floor, so that the passenger entering the car goes down two steps. The upper deck is reached by a gangway of half a dozen broad steps inside the car. Nickel-chrome steel of high resistance is utilized in these cars. They have SKF roller bearings and Westinghouse brakes. The car at capacity will carry 280 passengers.* Trains are to be composed of eight cars and are capable of carrying 2,040 commuters.

* The third-class coach has seats for 128 persons and standing room for 160. The combined first and second-class coach seats 122 and provides standing room for 106.—EDITOR.

* * *

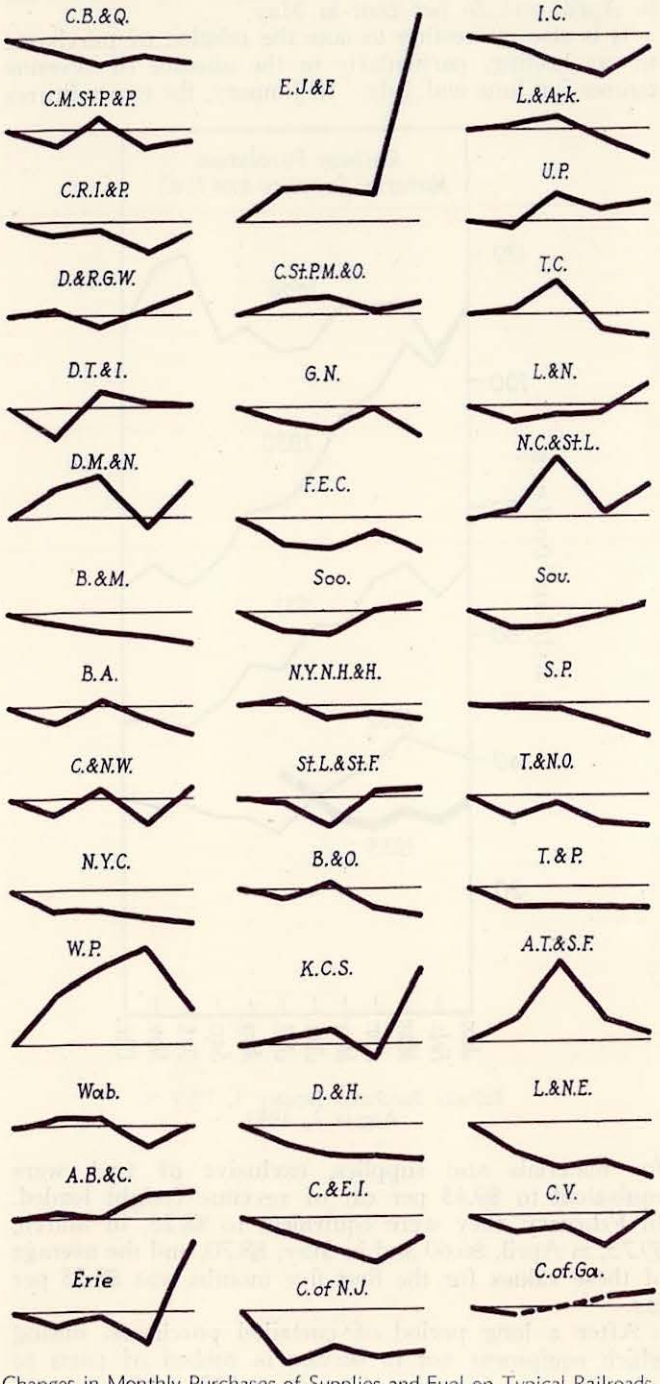


A Section of the Chicago, Milwaukee, St. Paul & Pacific's Exhibit at the Century of Progress Exposition

Railway Purchases Show Expansion

Expenditures for supplies grow as heavier traffic and better finances stimulate increased outlays for maintenance

ALTHOUGH it is still too early to determine the full extent to which the improvement in railway earnings, the increased shop work and the rising tide of material prices have affected railway buying, definite and substantial expansion in railway purchases, particularly for maintenance materials, is reflected by the preliminary statistics of purchases for the first seven months. The advance, compilations of the *Railway Age* show, although not uniform, began in April and has continued through July, available figures putting the May buying of the railroad about $1,500,000 ahead of April, June buying over $3,000,000 ahead of May, and July buying, from present indications, more than $3,000,000 ahead of June. The expenditures for materials in June were larger than in any previous month this year and exceeded the corresponding figures of the year previous —the first instance of this since 1929. On the other hand, inventories of supplies in stock on the railroad have been further reduced during the period.



Changes in Monthly Purchases of Supplies and Fuel on Typical Railroads, January, 1933 to May, Inclusive, Relative to the Values in January

Total purchases in May, according to estimates based on special reports from 50 railroads or railway systems which are earning 65 per cent of the total gross revenues, were approximately $31,300,000. This is compared to purchases of $29,000,000 in April, $31,900,000 in March, $30,100,000 in February, and $33,300,000 in January. Subtracting fuel for locomotives, the figures were $18,550,000 in May as compared with $17,000,000, $18,000,000 in March, $16,100,000 in February, and $18,000,000 in January. Subtracting cross ties also, the figures were $16,430,000 in May, $14,840,000 in April, $15,750,000 in March, $14,100,000 in February and $16,150,000 in January.

Railway Purchases—Six Months 1933*

	Fuel	Ties	Other Material	Total	Total Less Fuel
January	$15,300,000	$1,850,000	$16,150,000	$33,300,000	$18,000,000
February	14,000,000	2,000,000	14,100,000	30,100,000	16,100,000
March	13,900,000	2,250,000	15,750,000	31,900,000	18,000,000
April	12,000,000	2,160,000	14,840,000	29,000,000	17,000,000
May	12,750,000	2,120,000	16,430,000	31,300,000	18,550,000
June	12,800,000	2,850,000	19,350,000	35,000,000	22,200,000
Total	$80,750,000	$13,230,000	$96,620,000	$190,600,000	$109,850,000

* First five months based on 50 railroads. June values based on 25 roads. Subject to revision.

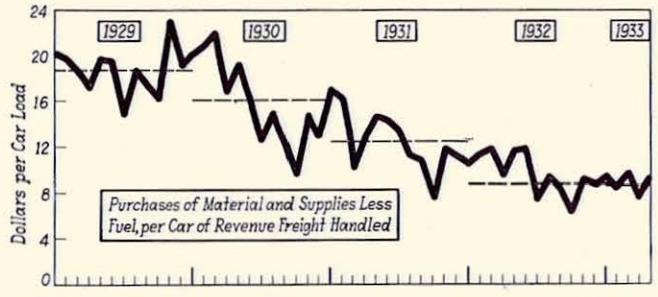
Since May purchases included money paid for considerable material ordered in April, and also since business and political conditions during the spring months caused the roads to increase rather than reduce the restraint on purchases for even essential supplies, the May figures reflect to a larger degree than at first appears the increases in consumption of maintenance materials with the upturn of business handled by the roads.

June Purchases

Accounts for June are still incomplete and those for July not yet available. However, the purchases of 23 roads for which comparative figures are available since the beginning of the year show a net gain in June purchases amounting to 11.3 per cent over the figures in May, from which it is estimated that $35,000,000 was expended by Class I roads in June for materials and fuel. This brings total purchases for the first six months of the year, excluding equipment and contract work, to $190,600,000, of which approximately $12,800,000 went for fuel, $12,850,000 went for cross ties and $86,600,000 for miscellaneous materials, including approximately $4,000,000 worth of rail.

While purchases have not increased on some roads,

gains predominated in the months of May and June. On the Atlanta, Birmingham & Coast, purchases increased every month since the beginning of the year. Purchases on the Bangor & Aroostook, amounting to $173,128 in May, are contrasted with $92,234 in April, $84,349 in March, $90,551 in February, and $75,936 in January. On the Central of Georgia, an expenditure of



Trend of Supply Dollars Spent Monthly in Relation to Monthly Car Loadings—Unadjusted for Changes in Material Prices

$160,840 in May is contrasted with $147,669 in April and $138,892 in January. The Central of Vermont purchases, amounting to $148,954 in June, compare with $88,284 in May, $66,000 in April, $78,950 in March, $75,670 in February, and $87,384 in January. Purchases on the C. & E. I., after declining to $80,399 in April, increased to $111,783 in May, and $129,262 in June. Rock Island expenditures were $100,000 higher in May and June than in April. Purchases on the E. J. & E., amounting to $125,936 in May and $118,910 in June, are contrasted with $56,724 in April, $59,751 in March, $58,228 in February, and $45,039 in January.

Erie purchases advanced from $501,203 in April, to $1,006,326 in May, and $951,962 in June. Illinois Central purchases declined to $705,694 in April, but moved back to $1,000,000 per month again in May. Expenditures on the N. C. & St. L. were $276,643 in June, as compared with $161,491 in April, and $151,945 in January. Southern Railway purchases have increased $150,000 per month above the low point of the last six months. On the Southern Pacific, the figures increased $200,000 from the low mark, while the latest figures for the Union Pacific, amounting to $1,451,246 in May, are contrasted with $1,334,000 in April. May purchases on the Kansas City Southern were double the April purchases, and current expenditures on the Santa Fe, while less than in the spring months are still ahead of the expenditures in January.

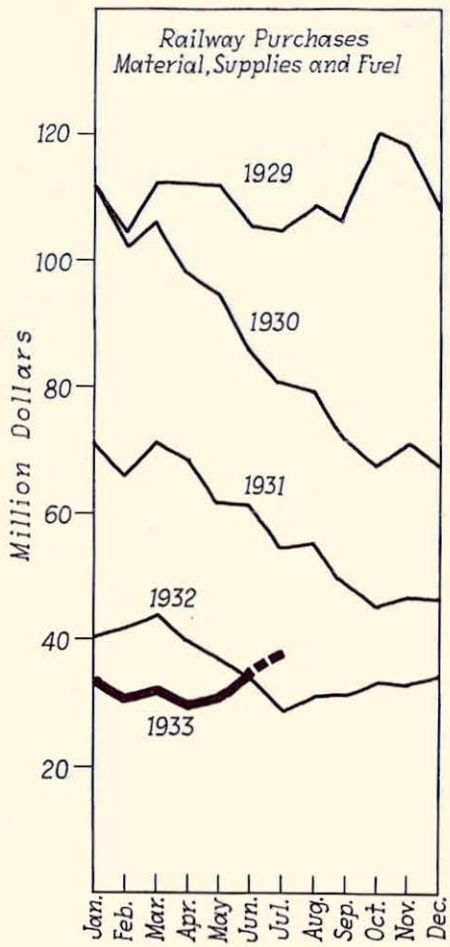
More Repair Parts

In a majority of instances where increases in purchases have been noticed, the increases extend to the purchase of material and supplies for repair work. Such expenditures advanced from $25,213 in April, to $53,207 in May and $43,979 in June on the C. E. & I. for example. They advanced from $225,434 in April to $293,541 in June on the Rock Island. On the E. J. & E., they increased from $16,354 in February to $80,687 in May, and $72,243 in June. Miscellaneous purchases on the Erie, amounting to $563,408 in June, are contrasted with $309,000 in April. On the Great Northern the June figure of $307,520 is contrasted with $192,581 in April. The latest report for the Louisville & Nashville places purchases of miscellaneous materials $130,000 above the low mark last spring, while current purchases of miscellaneous materials on the Soo are double the purchases during one month last spring. Miscellaneous expenditures on the Union Pacific in May advanced from $464,519 in January to $736,047 in May. They were also substantially increased on the Chicago & North Western, and the Omaha. On the whole, the advances in repair material have been more prevalent on the western than on the eastern lines.

July Purchases

The drift of purchases in July, pending actual figures, is indicated by earning statements. It is well established statistically that purchases increase with increases in revenues and decline with reductions in revenues, although not necessarily at the same rate. This sensitiveness of purchasing to revenue was brought out in the purchases of the past three years and was repeated in the first five months of 1933. Expressing both revenues and purchases as a percentage of their values in January, 1930, revenues stood at 50 per cent in January, 1933, 47 per cent in February, 48 per cent in March, 50 per cent in April, and 57 per cent in May, while purchases, exclusive of fuel, stood at 26 per cent in January, 23 per cent in February, 25 per cent in March, 24 per cent in April, and 26 per cent in May.

It is also interesting to note the relation of purchases to car loading, particularly in the absence of revenue figures for June and July. In January, the expenditures



Railway Purchases January 1, 1929 to August 1, 1933

for materials and supplies, exclusive of fuel, were equivalent to $9.45 per car of revenue freight loaded. In February, they were equivalent to $8.25, in March, $9.75, in April, $6.60 and in May, $8.70, and the average of these values for the first five months was $8.55 per car.

After a long period of curtailed purchases, during which equipment not in service is robbed of parts to

(*Continued on Page 247*)

I. C. C. Refuses to Reduce Rates

Says even 10 per cent cut would leave deficit after fixed charges on probable 1933 traffic

THE Interstate Commerce Commission, in a 7 to 3 decision made public on August 5, declined to make general reductions in freight rates on basic commodities in addition to the emergency surcharges which expire on September 30. Commissioner Aitchison dissented, favoring a reduction of at least 10 per cent under the maxima set in 1922, and Commissioners Porter and Lee joined him in this expression. Commissioner Eastman, Federal Co-ordinator of Transportation, did not participate in the case.

The proceeding arose out of a petition filed with the commission on January 25 by the American Farm Bureau Federation, the Farmers' Educational and Co-operative Union of America, the National Coal Association, the National Grange and the National Lumber Manufacturers' Association, who alleged, among other things, that since the latter part of 1929 there has been a severe decline in the price of commodities in general which has not been reflected in similar reductions in charges for railway service, and that a readjustment of railway rates would stimulate traffic by rail in these commodities.

The summary of the case concurred in by the majority of the commission reads as follows:

Summary

There appears to be a general impression that the freight rate level has been reduced from the peak of 1920 only by the general 10 per cent reduction of 1922. On the contrary, thousands of reductions have been made by us and by carriers since that year. The average ton-mile earning in the first quarter of 1933 was about 22 per cent below the 1920 peak and 11 per cent below the level resulting from the 1922 reduction. Excluding the emergency charges which are scheduled to expire with September 30, the present ton-mile earnings are about 24 per cent below the peak and 13 per cent below those of 1923. The general average rate level probably has not declined as much as the ton-mile earnings, because of the loss of much short-haul traffic, which has no doubt increased the average haul and depressed the average rate per ton-mile. However, it is clear that the general freight rate level is substantially below that immediately following the general reduction of 1932. The lowering, however, has not been uniform, many rates not having been reduced at all since 1922, and others having been reduced as much as 50 per cent or more.

It is difficult to see how general rate reductions would increase the total volume of business of the country unless they bring about increased consumption through lowered prices to consumers. During the depression, prices to consumers have, without stimulating consumption, been lowered to a far greater extent than could possibly result from a rate reduction as great as 25 per cent. Purchasing power has, of course, been low. The record does not support a conclusion that general reductions in rates would materially increase the commerce of the country or that they would increase rail freight traffic except to the extent that they would result in recovery of tonnage from motor and water carriers.

Destructive Competition of Unregulated Carriers

Greatly increasing amounts of traffic are being lost to competing motor and water carriers by the rail lines, and the latter have been forced to make numerous large rate reductions, sometimes 50 per cent or more, in efforts to retain their present traffic or to regain traffic already lost to these competitors. General reductions, substantial in amount, would recover some traffic from motor and water carriers and tend to minimize further losses to such competitors; but as such competition exists either not at all, or only to a limited extent, as to a considerable proportion of the traffic, the loss in revenue on the latter will more than offset the gain from the recovered traffic. It is both natural and proper that the development of trucks and water carriers should result in loss by the rail carriers of that traffic which can be most economically handled by these other forms of transportation. But the unrestrained and destructive competition between motor carriers, between water carriers, and of both with rail carriers, is not only having an unduly depressing effect upon the revenues of the rail carriers but is exerting a disorganizing influence upon business in general and tending to prevent the maintenance of a stable and non-discriminatory rate adjustment by the rail carriers. These conditions will undoubtedly exist so long as interstate motor and water carriers are exempt from requirements that their rates be published and maintained on a reasonably stable and non-discriminatory basis.

After giving full consideration to the recent upturn in business, there is little probability that the volume of freight traffic in the next 12-month period will exceed that of 1931.

Wage Decision a Factor

In 1932 tax accruals amounted to over 10 per cent, and compensation of employees to nearly 57 per cent, of the total operating expenses and taxes. These two items constituted about 67 per cent of such expenses. Public announcement has been made that the major part of the 57 per cent portion will not be reduced at this time. Fuel and supplies constitute the major portion of the remaining expenses. Prices of these materials have been at a very low level and are more likely to increase than to decline. Consequently, there is no immediate prospect of material reduction in railway expenses, although greater economy and efficiency in operation are no doubt ultimately possible through greater co-operation and co-ordination, and in other ways. Such questions are being investigated by us in a pending proceeding and by the Federal Co-ordinator of Transportation.

The recent upturn in business and traffic, if continued, will, at present rates, result in materially greater gross revenue in the ensuing year than in the one just past; but the favorable effect upon that revenue will be in some measure offset by further losses of traffic to competing motor and water carriers and by further rate reductions to meet such competition; and its full effect will not be reflected in net income because of the added expense of handling the additional traffic and the necessity for greater maintenance expenditures.

Charges Could Not Be Met with Lower Rates

Based on the best estimate we are able to make of traffic, expenses, and taxes likely to exist in the coming 12-month period with freight rates 10 per cent below those of 1931, the carriers as a whole would fail to earn their fixed charges by over 20 million dollars. With rates 25 per cent below those of 1931, the probable net income would fall short of meeting fixed charges by nearly $500,000,000.

With a general reduction in freight rates no greater than 10 per cent, unless there were a greater increase in traffic than now seems probable, and unless large additional government aid were extended, many more carriers would be forced into receivership or reorganization with consequent serious losses to investors in railroad securities, among whom are many savings banks and life insurance companies. With a 25 per cent reduction, such receivership or reorganization would be inevitable for all but the strongest carriers.

Considerable amounts of money will be needed by the carriers to meet maturing obligations, necessary expenditures for deferred maintenance, and for other purposes. Unless such funds are furnished by the government, they must be obtained from private sources. A reduction of 10 per cent would so impair the carriers' credit as to make it difficult, if not impossible, to obtain the necessary money.

Good Service More Important Than Low Rates

The value of the service to the shipper, when measured solely by the decline in commodity prices and by the depressed condition of industry, has been lowered. The recent upturn in commodity prices, coupled with the federal government's recovery program, indicates that further general improvement in price level and the condition of industry may be expected, thus lessening the disparity between commodity prices and the condition of industry, on the one hand, and freight rates on the other. But

shippers, as well as the public generally, are vitally interested in stability of rates and in the maintenance of adequate and efficient railway transportation service. The maintenance of such service is one of the elements to be considered in measuring the value of the service to the shipper. A general reduction in rates at this time would threaten the possibility of furnishing adequate transportation service to the public. The benefit which would accrue to the average agricultural or industrial shipper from a general reduction in rates would be small compared with the disastrous effect on respondents' revenues and credit. These elements, considered together, indicate that a general reduction in rates would not be in the public interest.

Certain interveners have advocated reductions on so-called basic commodities only. Others take the position that in the event general reductions are not required, separate consideration should be given to the commodities in which they are interested. There is little evidence of record by which to judge the reasonableness of rates on particular commodities or descriptions of traffic. No one has presented or can present a workable definition of basic commodities, nor has anyone shown how a list of such commodities could be selected without creating prejudice and preference as between different industries and disastrous results to some. The movement of particular commodities is much greater on some railroads than on others. Reductions confined to particular commodities would therefore have materially greater effect upon some carriers than upon others. Although the revenue effect of a percentage reduction confined to certain commodities would be less in the aggregate than the same horizontal percentage reduction applied to all traffic, its effect upon particular carriers would in many cases be practically as severe

In our first report in the *Fifteen Per Cent Case, 1931, supra,* October 16, 1931, we said at page 580, under the heading "The Railroad Future":

> The railroads now furnish the backbone and most of the other vital bones of the transportation system of the country, and we believe this will be the situation for a long time to come. We are not impressed with the thought that they are doomed, in anything like the near future, to go the way of the stage coach and canal.
>
> The most effective remedy for the immediate ills of the railroads is the economic recovery of the country. The present low earnings are not the result of low rates but reflect general industrial conditions. * * * While the tide may be slow in turning, there is no more reason for thinking that business will not improve than there was in 1928 for thinking that depressions were a thing of the past and that we were in an era of permanent prosperity. * * * When railroad earnings take a sharp turn upward, as in due time they will, railroad credit will also rise.
>
> So far as freight service is concerned, the railroads have so many and so great inherent advantages of economy, particularly in the case of the longer hauls and the heavier traffic, that we can not believe that they will not be able to withstand the competition of the motor trucks. It may be that some traffic must permanently be surrendered to the trucks, but for the most part it is traffic on which the railroads have always claimed that they lost money.

At that time we believed that the depression was the principal cause of the then unfavorable condition of railroad revenues and credit; that, while motor competition had had serious and probably permanently adverse effect upon passenger traffic and earnings, the competition of water and motor carriers was comparatively unimportant in the handling of freight and did not loom large in the general railroad situation; and that with recovery in business no general alarm need be felt for the future of the railroads.

Admits Underestimate of Effect of Truck Competition

The depression has been much more prolonged and severe than it was then possible to foresee. The competition of other forms of transportation has grown to such formidable proportions that the opinion expressed in 1931 no longer portrays the situation. Formerly it was thought that competing motor carriers were taking and would take principally short-haul less-than-carload traffic, and that water carriers would take principally low-grade freight. Time has disproved both of these beliefs. Water carriers are now taking much high-grade, long-haul traffic. Trucks are handling less-than-carload freight over long distances and also vast quantities of freight which heretofore has moved on the railroads in carloads, principally commodities which have been most profitable to the railroads.

Until the advent of active water and truck competition rates were made largely on the theory of what the traffic could reasonably bear, low-grade articles having taken relatively low rates and high-grade articles relatively high rates. A large part of the carriers' profit was thus derived from the higher grade commodities, but today much of the latter traffic either is lost to motor or water carriers or is handled at rates which produce little or no profit. In the 1933 act the Congress points to the need, in the public interest, of adequate and efficient railway transportation service. But such service cannot be maintained if the cream of the railroads' traffic is to be taken by competitors and if we require reductions on the traffic not subject to competition. If carriers cannot earn enough to pay the cost of service, plus a reasonable profit, all incentive for continuing the service is removed. The country is not ready to abandon its railroads. We believe that it is our duty to do that which presents the greatest promise of preserving in operation the efficient railroad mileage of the country. General reductions in rates would tend to defeat that end.

The finding of the majority reads as follows:

Finding

We find that the present freight rates and charges subject to the act, in the aggregate, as a whole or in the several rate groups, or as applicable to specified commodities or descriptions of traffic, are not shown to be unreasonable.

The conclusions reached in this proceeding are without prejudice to those which may be reached in other proceedings in which the reasonableness of particular rates or rates on particular commodities is or may be in issue. What we here conclude is that general reductions are not warranted, and that there is not sufficient evidence to determine what reductions, if any, should be made in rates on particular descriptions of traffic or on particular commodities. Nothing here said should be construed as an expression of opinion that all rates throughout the country are necessarily reasonable, or that no rate changes of importance are needed.

Suggests Adjustments on Grain, Lumber, Export Coal

We ordered revision and reduction of grain rates in the western district and for export on July 1, 1930. The rates so ordered went into effect, but as a result of a decision of the Supreme Court of the United States the old rates were restored. We thereupon reopened the proceeding for further hearing. It is expected that the latter will be concluded at an early date. Subsequent steps in the proceeding will be taken as expeditiously as possible. Although we are not warranted in this proceeding in requiring readjustments of grain rates or even in definitely suggesting that respondents should make such readjustments, nevertheless they should give consideration to voluntary revision of their rates in the light of our original decision and of the additional evidence developed at the further hearings, so far as that is at present possible. This applies particularly to certain border adjustments.

The exportation of bituminous coal to Europe and South America has almost ceased, although in former years there was a large movement from which the rail carriers derived considerable revenue. The carriers have been giving consideration to requests of coal operators for lower export rates intended to revive this traffic, but favorable action has been prevented, at least in part, by the fear that the carriers would be forced to make similar reductions on coal moving beyond the ports to destinations in the United States and Canada. This record is insufficient upon which to base an opinion as to whether undue prejudice would result from the establishment of such export rates, but we feel warranted in saying that there is nothing here to indicate that undue prejudice would result from the establishment of such rates. Carriers are urged to give further consideration to the subject.

The lumber situation has been hereinbefore discussed at some length. The carriers may well give consideration to the inroads upon this traffic by trucks and water carriers, particularly the latter, with a view to determining whether there are instances in which lower rates might result in greater rail movement and net revenue. The same comment may be made of a number of other commodities.

As soon as sufficient time has elapsed so that it can be determined with reasonable certainty that the prices of particular commodities have stabilized on a level lower than that of commodities in general, and that the rates on such commodities are higher than they can reasonably bear, consideration should be given by respondents to readjustment of such rates in harmony with the changed conditions. The general process of rate revision to meet competition of other forms of transportation, to meet other contemporary conditions and to facilitate the free flow of commerce must continue without abatement. Any industry may bring the rate level on its commodities to our attention with a view to bringing about such readjustments in the rates thereon as may be warranted by changed conditions which appear to have sufficient permanency to be used as a basis for readjusting rates.

The proceeding will be discontinued.

Competitive Transport Alarming

The decision goes into detailed examination of the testimony presented and occupies 60 pages of single-spaced typewritten foolscap pages. The extent of competition of truck and water carriers is indicated in many

specific instances at a degree of severity which plainly has made a greater impression on the commission in this proceeding than at any time heretofore. As a matter of fact, the dissenting opinion of Commissioner Aitchison is based largely on his contention that "no traffic is so tied to the rails that it cannot be taken away by another competing form of transport, or for which a substitute cannot be found which can be transported at the lower rates afforded by some of these competitors, or which cannot be relieved from high freight rates by the relocation of the industry so as to avoid long rail hauls or, indeed, any rail hauls at all."

Extracts from the observations of the majority follow:

The Present Freight Rate Level

In 1918, during the period of Federal control, the Director General made effective general increases in practically all freight rates. In 1920 we authorized general increases of 40 per cent in the eastern group, 25 per cent in the southern and mountain-Pacific groups, 35 per cent in the western group, comprising roughly western trunk-line and southwestern territories, and 33⅓ per cent in most interterritorial rates. In 1921 we required reductions, which became effective in January, 1922, in carload rates on grain, grain products, and hay. The reductions so prescribed ranged from 10 to 22 per cent, and as to coarse grains and their products resulted in the mountain-Pacific group in rates practically the same as prior to the 1920 increase and in the western group in rates only about 6 per cent in excess of those in effect prior to that increase. Practically all other carload rates upon products of the farm, garden, orchard, and ranch throughout the country were reduced 10 per cent in January, 1922. In *Reduced Rates, 1922*, 68 I. C. C. 676, we prescribed general reductions in freight rates and charges throughout the country sufficient to lower the rates in the respective districts to bases not exceeding the following percentages in excess of the rates in effect immediately prior to the general increase of 1920: Eastern district, 26 per cent; western trunk-line and southwestern territories and between those territories and Illinois territory, 21.5 per cent; southern and mountain-Pacific groups, 12.5 per cent; and on interterritorial traffic, 20 per cent, with certain exceptions.

The present rate levels in the respective rate groups are those resulting from the general changes above described, modified by subsequent readjustments. In the 11-year period since 1922 many important readjustments have been made by us, most of which represented both reductions and increases, but with the former predominating; and in the main undoubtedly they brought about an appreciable lowering of the rate level. In addition, rail carriers have made many readjustments arising out of competition between themselves, the demands of shippers, or the needs of commerce, and the competition of other forms of transportation. In the past two years thousands of reductions of individual rates have been made in an effort to meet rapidly increasing motor-truck and water competition, principally the former.

Rates Now Only 33 Per Cent Above Pre-War

The average revenue per ton-mile for 1932 was approximately 6.4 per cent below that for 1923, and approximately 18 per cent below that for 1921, the only full year in which the increases of 1920 were applicable. The extent to which reductions have been made to meet motor-vehicle and water competition has been materially greater since the middle of the year 1932 than theretofore. These reductions no doubt in large measure explain the still further lowering of the average ton-mile earning in the first quarter of 1933, which was 9.94 mills as compared with 10.44 mills in the corresponding period of 1932. The emergency charges authorized in the *Fifteen Per Cent Case, 1931*, 178 I. C. C. 539, 179 I. C. C. 215, 191 I. C. C. 361, became effective January 4, 1932, and have been in effect continuously since that date. The ton-mile earnings of 1932 and the first quarter of 1933, therefore, reflect the emergency charges. Excluding the latter charges, which expire with September of this year, the ton-mile earning in 1932 was about 10.19 mills, and in the first quarter of 1933 was about 9.70 mills. The latter is 13 per cent below the earning for the year 1923, the first full year after the reduction of 1922, and 24 per cent below that for the year 1921.

The revenue per ton-mile in 1932, including the emergency charges, was approximately 43 per cent higher than the average level of the five prewar years 1910-1914. Excluding those charges, it was about 39 per cent higher. The per ton-mile earning, including the emergency charges, in the first three months of 1933 was approximately 36 per cent higher than the average of the five prewar years. Excluding the emergency charges, it was about 33 per cent higher. So far as revenues per ton-mile may be accepted as reflecting freight rate levels, it therefore appears that the general level that will exist after the emergency charges expire on September 30 will be about 33 per cent above the prewar level of 1910-1914, 24 per cent below the so-called war peak of 1921, and 13 per cent below what may be termed the postwar level authorized by us in 1922. That these figures represent a level somewhat less than the actual level is probable, having in mind the considerable diversion of short-haul traffic to trucks in recent months which probably has resulted in a somewhat greater proportion of long-haul traffic subject to comparatively low rates per ton-mile.

Position and Evidence of Interveners

The evidence presents a comprehensive picture of the effects upon industry generally of the existing business depression. Industrial production in March, 1933, as shown in Federal Reserve Bulletin, was at a rate only three-fifths of that of the years 1923 to 1925. Factory employment in the same month stood at 57 per cent of the 1923-1925 level and factory payrolls at 37 per cent, the lowest point reached in a long period of years.

Wholesale commodity prices in the fore part of 1933 stood at 88 per cent of the pre-war (1910-1914) level and 60 per cent of the 1926 level. Business and banking failures and foreclosures of farm and city properties have occurred in large numbers in all sections of the country. Only exceptional industries have escaped the full effects of the depression, although some have been better able than others to adjust their operations to the changed conditions.

The contentions of the parties seeking reductions in this proceeding, briefly summarized, are (a) that the value of respondents' transportation service to shippers has, by reason of the decline in prices of commodities and the cheaper transportation service afforded by motor-vehicle and water carriers, declined materially; (b) that in the case of many commodities, in the transportation of which respondents must necessarily be employed, the existing level of rates reduces the radius of distribution, thus tending to injure or destroy industries dependent on distant markets, and in some cases prevents any substantial movement; and (c) that, conceding the fact that respondents as a whole are earning substantially less than a fair return and individually are in numerous cases earning less than necessary operating expenses, the value of the service to the shipper, based upon the value of the commodity and the availability of cheaper means of transportation, must take precedence over the element of cost of service, plus a reasonable return. Some of the interveners seek general reductions of all rates. Others propose reductions only on so-called basic commodities, others merely ask that if rates on commodities with which their products compete are to be reduced theirs should also be reduced, and still others ask for reductions only on the commodities which they ship. Generally, the amount of reduction sought is 25 per cent.

An index of freight rates, prepared by the United States Department of Agriculture, in which 1913 rates are used as 100, stood at 140 in 1931 in the case of wheat and cotton and at 156 in the case of livestock. The farm prices of these products on December 1 of the same year stood at 46 per cent of pre-war in the case of wheat and cotton and at 73 per cent in the case of meat animals. The index is based on a limited number of rates and may be considered only generally representative of the trend on these commodities.

Subsequent changes in prices and rates materially alter the relationship of the two indexes.

Farm Prices Moving Upward

This statement of the relationship of rates to price needs, however, to be brought more nearly to date. In 1932 the rate index for wheat, cotton and livestock combined had fallen to approximately 137. Certain prices of farm products have shown striking advances in April and May, 1933, particularly in the latter month. A comparison of May, 1932, and May, 1933, prices at local farm markets shows increases as follows: Wool, 101.1 per cent; cotton, 57.7 per cent; wheat, 39.2 per cent; hogs, 31.1 per cent; corn, 29.2 per cent; butter fat, 23.9 per cent; eggs, 14.5 per cent, and horses, 14.5 per cent. On the other hand, decreases of 24.9 and 7.0 per cent occurred in the prices of hay and potatoes, respectively, and there were minor changes, mainly decreases, in beef cattle, oats, butter, veal calves and lambs. Further, only in the case of wool was the May, 1933, price equal to the pre-war (1910-1914) average for the same month.

Hay, oats, hogs and corn were over 40 per cent below pre-war and horses were 50.7 per cent, while potatoes were 37.1, cotton 35.4, wheat 34.7, veal calves 31.7, beef cattle 28.2, eggs 29.3, lambs 27, butter 17.4 and butter fat 15.8 per cent lower than before the war. The amount of further recovery required to

put agricultural prices back on their pre-war basis is thus indicated.

Railway Competitive Situation

An outstanding feature of the testimony of both carriers and shippers is the extent to which other forms of transportation have made inroads into the freight traffic of railways in recent years. Large losses in passenger traffic due to competition of busses and private automobiles have had a material adverse effect upon the gross and net revenues of the rail carriers. The latter have suffered large losses of coal traffic through the development of hydro-electric power and the greater use of natural gas for fuel purposes. For a number of years the major portion of the crude petroleum movement of the country has been by pipe line or tank vessel, but the percentage of the total taken by these two forms of transportation probably is not materially greater at present than for some time past. But recently gasoline pipe lines have been built from various points in the southwestern oil fields to large consuming centers in the Middle West, such as Kansas City, Omaha, St. Louis and the Twin Cities, and from points on the Atlantic seaboard to points in the interior East, resulting in the loss of much additional profitable tonnage by the rail carriers.

Water competition between north Atlantic ports, on the one hand, and south Atlantic and Gulf ports, on the other, through the Panama Canal between Pacific ports and Atlantic and Gulf ports, on the Great Lakes and on the Ohio and lower Mississippi rivers, has existed for years, but has increased in severity in recent months. For example, members of the West Coast Lumbermen's Association in 1929 shipped 64 per cent of their lumber destined to States east of the Mississippi River through the Panama Canal; in 1930 they shipped 66 per cent; in 1931, 75 per cent, and in 1932, 80 per cent. Lumber from the Pacific Coast through the canal goes not only to Atlantic ports but moves considerable distances inland by truck, by rail or by lake, sometimes as far west as Chicago. The recent development of light-draft vessels able to operate between New York City and ports on the Great Lakes has resulted in taking from rail carriers much traffic not previously handled over lake routes.

But by far the most serious diversion of traffic from rail carriers in recent years has been to trucks. As the result of improved highways, movement by truck has greatly increased almost everywhere. Less-than-carload traffic has suffered more severely than has carload traffic, and the loss of the former has been so serious that, although in recent weeks loadings of all classes of carload freight have been in excess of those for corresponding weeks in 1932, the number of cars loaded with merchandise in less-than-carload quantities at the close of the record was still below loadings for the previous year. But the loss of traffic to trucks is by no means confined to less-than-carload shipments. A partial list of important commodities as to which large losses of carload traffic have taken place includes fruits and vegetables, livestock, canned goods, cotton seed, cotton, sugar, furniture, soap, wool, coffee, packing-house products, automobiles and beverages. As to only a few of these commodities is there concrete evidence showing the proportion of the carload tonnage that has been diverted, but in the case of packing-house products, fresh meats and other commodities produced or handled by one of the largest packers it is testified that 24.5 per cent of the total tonnage in recent months has been moving by truck, notwithstanding many reductions in rates made by the rail carriers.

Only 27 Per Cent of Traffic Non-Competitive

The southwestern carriers attempted to separate their total tonnage into three classes: First, commodities not subject to truck or water competition to any marked extent for either short or long hauls; second, articles subject to truck or water competition for short distances, and, third, commodities subject to truck, water or pipe-line competition for both short and long distances. Of the total tonnage 27 per cent is placed in the first class, 60 per cent in the second class and 13 per cent in the third class. Of the 60 per cent assigned to the second class it is estimated that 64 per cent moves for long distances and therefore is not subject to truck competition to any material extent. Of the articles assigned to the third group approximately one-half of the tonnage consists of crude petroleum which is handled principally by pipe line or vessel and only to a comparatively small extent by truck; therefore, this computation indicates that about 28 per cent of the southwestern carriers' tonnage is subject to direct and keen truck competition.

Stating the competitive situation in terms of tonnage does not fully indicate the extent of the adverse effect upon the rail carriers inasmuch as much of the traffic handled by trucks is high grade, subject to comparatively high rail rates and which heretofore has produced material profit for the rail carriers. The competition is not confined to high-grade commodities, however. In Illinois about 50 per cent of the domestic coal traffic has been lost to the rail lines for hauls less than 100 miles. Over a million tons of coal were trucked into St. Louis and East St. Louis during the past year. In Alabama the movement by truck increased from 90,000 tons in 1929 to 335,000 tons in 1932. Trucks moved about 350,000 tons into Denver in 1932. In the Pittsburgh district approximately 100,000 tons of coal per month are moved by truck. Sand, gravel, brick and similar commodities are also moving by trucks in considerable volume for short distances.

The rail carriers are not only affected by the loss of tonnage to trucks and water carriers, but have been forced to reduce thousands of rates in an effort to retain their existing tonnage or regain some of that already lost. Carriers in the different territories presented exhibits showing reductions made by them to meet competition. The exhibit of the southern carriers contains 58 large sheets detailing various reductions that have been made for this purpose, some only on one commodity between a few points and others on one or more commodities throughout the entire southern region.

Deferred Maintenance

Respondents' witnesses estimate that at the present rate of maintenance at the end of 1933, with traffic no greater than in 1932, the accumulated deferred maintenance in the eastern district (including the Pocahontas region) will be approximately $200,000,000, and in the western district $90,000,000. On the basis of average traffic in the years 1927-1931 carriers estimate deferred maintenance at the end of 1933 as about $330,000,000 in the eastern district and $210,000,000 in the western district. No maintenance estimates were presented for the southern region. If this is taken into account, the preceding estimates indicate that in the country as a whole at the present time there is an accumulated under-maintenance of something in excess of $300,000,000 on the basis of 1932 traffic and something over $600,000,000 if the traffic of the years 1927-1931 be taken as normal.

The Question of Law

Certain of the interveners concede that respondents are not now obtaining a fair return and that there is no possibility of their doing so without material industrial recovery. However, they take the position that these matters should receive little or no consideration in this proceeding, and urge that in determining the reasonableness of existing freight rates and charges the value of the service to the shipper is paramount and controlling; that the present rates exceed the value of the service, are therefore in excess of just and reasonable rates, and should be substantially reduced. In support of this view they cite *Covington etc. Turnpike Co.* v. *Sandford,* 164 U. S. 578, as holding that the right of a public utility to any return upon its property devoted to the public service is subject to the limitation that the return shall be earned without the imposition of rates which exceed the bounds of reasonableness. They point out, as especially pertinent in the present economic situation, the holding of the court to the effect that if the establishment of new lines of transportation should cause a diminution in the number of patrons of the turnpike there in question, and consequently of the tolls collected, that is not in itself a sufficient reason why the operating company should be allowed to maintain rates which would be unjust to those who must and do use the turnpike.

Those interveners also cite *Smyth* v. *Ames,* 169 U. S. 466, 467, in which the court said:

> What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth.

And as accurately rounding out the doctrine they quote the following from *Corpus Juris,* Vol. 10, page 418:

> The public is entitled to demand that no more shall be exacted from it than the services rendered are reasonably worth, and this right takes precedence even over the right of the carrier to a fair return on its investment when the two rights can not stand together.

Certain interveners cite *Public Service Commission* v. *Great Northern Utilities Co.,* 289 U. S. 130, in which the court said that the "due process" clause of the Fourteenth Amendment to the Constitution of the United States safeguards against the taking of private property, or the compelling of its use, for the public service without just compensation, but does not assure to public utilities the right in all circumstances to have a return upon the value of the property so used. To this the court added that the loss of, or the failure to obtain, patronage because of competition does not justify the imposition of charges that are exorbitant and unjust to the public, the "due process" clause not protecting public utilities against such business hazards.

Respondents, on the other hand, urge that revenue considerations are paramount. They refer to their failure in 1932 to earn

fixed charges by 152 million dollars, and to the fact that upon any basis of valuation of their property they earned in that year far less than a fair return on the value of the property devoted to the service of transportation. They urge that the results in 1932 and so far this year indicate that upon any basis of valuing their property they will, at present rates, earn far less than a fair return during the ensuing year. They take the position that in view of their present condition no general reductions in rates may lawfully be required by us.

In support of their view respondents cite the *Railroad Commission cases,* 116 U. S. 307; *Northern Pacific Railway* v. *North Dakota,* 236 U. S. 585; *Vandalia Railroad Co.* v. *Schnull,* 255 U. S. 113; *Railroad Commission* v. *East Texas Railroad* 264 U. S. 79; *Banton* v. *Belt Line,* 268 U. S. 413; *Board of Commissioners* v. *New York Telephone Co.* 271 U. S. 23; and *McCardle* v. *Indianapolis Water Co.,* 272 U. S. 400. They challenge as *obiter dicta* the above-indicated portions of the opinions of the Supreme Court relied on by interveners, and they argue that the quotation from *Corpus Juris* is unsupported by any decision of that court.

These contentions were extensively discussed by the parties, both on brief and oral argument, but in view of our conclusions and the reasons therefor, hereinafter fully stated, we find it unnecessary to express any opinion with respect to them. It seems pertinent, however, to point out that in the *Fifteen Per Cent Case, 1931, supra,* in considering section 15a as added to the act in 1920, we said:

> But section 15a has not, in our opinion, made revenue needs the "paramount and controlling" factor in the determination of a reasonable general level of rates. Factors which theretofore were relevant and entitled to consideration, notwithstanding the revenue needs of individual carriers, are still relevant and entitled to consideration, notwithstanding the revenue needs of the carriers in the aggregate, or by groups. * * *
> For the moment we express no opinion as to the weight to be given these particular factors in the present proceeding. That will be considered later. But that they are relevant and material factors which must be given consideration we are persuaded. We are here speaking of the general level of rates, as applied to all traffic, or particular forms of traffic, and not of individual rates.

Since the institution of this proceeding section 15a was amended by the Emergency Transportation Act, 1933. It now provides:

> In the exercise of its power to prescribe just and reasonable rates the Commission shall give due consideration, among other factors, to the effect of rates on the movement of traffic; to the need, in the public interest, of adequate and efficient railway transportation service at the lowest cost consistent with the furnishing of such service; and to the need of revenues sufficient to enable the carriers, under honest, economical, and efficient management, to provide such service.

The first two factors specified in that section are elements to be considered in determining the value of the service to the shipper. Adequate and efficient railway transportation service is important not only to the public in general but to the shipper in particular. The third factor relates solely to the revenue needs of the carriers. The weight to be given to the respective factors specified in that section depends upon the facts presented.

Purchases Show Expansion

(*Continued from Page 242*)

produce supplies for equipment in service increases in car loading figures require purchases in greater proportion than would be required to maintain and operate equipment already in service. At this time purchasing is also subject to increases in material prices. Using the five-month average of $8.55 per car as the rate of purchasing in July, however, it follows that with approximately 3,100,000 cars of revenue freight loaded in that month, the July expenditures for manufactured materials and supplies were somewhere in the neighborhood of $26,500,000 bringing the total July supply bill, with fuel added, to approximately $39,000,000. This is approximately $11,000,000 more than the railroads were estimated to have expended in July, 1932. If this prospect does not materialize, it will not be because of any lack of demand for material but because revenues are still being conserved to cover interest and fixed charges.

While the decline in prices must be taken into consideration in judging the trend of purchases prior to 1933, and while the possibility of rising prices must be considered in projecting the trend of purchases from now on, it is significant of the purchasing possibilities of the railroads that the average expenditure of $8.55 per car of revenue freight loaded during the first five months of 1933 is in contrast to an expenditure for materials and supplies, exclusive of fuel, at the average rate of $12.50 per revenue car loaded in 1931, $16.80 in 1930, and $18.70 in 1929.

Freight Car Loading

REVENUE freight loaded in the week ended July 29 totaled 638,396 cars, according to the compilation of the Car Service Division of the American Railway Association. This was a decrease of 10,518 cars below the preceding week this year, but an increase of 127,293 cars, or 24.9 per cent, above the corresponding week in 1932. It was a reduction of 123,422 cars below the corresponding week in 1931. Coal, coke, ore and merchandise l.c.l. freight showed increases for the week of July 29 over the preceding week this year, but grain and grain products, live stock, forest products and miscellaneous freight showed reductions. All commodities showed increases over the corresponding week last year except grain and grain products. The summary follows:

Revenue Freight Car Loading

Week ended Saturday, July 29, 1933

Districts	1933	1932	1931
Eastern	148,342	117,799	173,002
Allegheny	134,547	97,668	148,472
Pocahontas	50,196	33,774	45,268
Southern	90,145	71,945	106,845
Northwestern	85,942	63,375	107,155
Central Western	82,988	83,481	115,617
Southwestern	46,196	43,061	65,459
Total Western Districts	215,126	189,917	288,231
Total All Roads	638,296	511,103	761,818
Commodities			
Grain and Grain Products	33,365	40,504	51,520
Live Stock	15,067	14,505	19,797
Coal	128,006	116,399	119,565
Coke	6,759	2,319	4,808
Forest Products	27,567	15,409	27,373
Ore	26,633	6,447	35,342
Merchandise, L.C.L.	172,407	166,870	213,942
Miscellaneous	228,592	177,706	289,471
Week Ended July 1	634,074	488,281	667,630
Week Ended July 8	539,223	415,928	762,444
Week Ended July 15	648,206	503,761	757,989
Week Ended July 22	648,914	501,912	742,481
Week Ended July 29	638,396	511,103	761,818
Cumulative Total, 30 Weeks	15,716,457	16,040,524	22,045,217

Car Loading in Canada

Car loadings in Canada for the week ended July 29 totaled 37,131 cars, which was an increase over last year's loadings of 583 cars, but under the previous week's by 1,858 cars; and the index number of the Dominion Bureau of Statistics dropped from 64.08 to 62.10.

THE NATIONAL FEDERATION OF BUILDING SUPPLY ASSOCIATIONS AND THE NATIONAL RETAIL LUMBER DEALERS ASSOCIATION are considering the inclusion of uniform transportation requirements in the codes being prepared for the National Recovery Administration. The proposed clause covering this point is as follows: The methods employed in the transportation of building materials from sources of supply to dealers' warehouses and yards are vital factors in the orderly conduct of the retail building supply industry. Since unorganized and unregulated forms of transportation have repeatedly upset stabilized markets and materially interfered with orderly business procedure, it is the judgment of the building supply industry that uniform shipping methods, rates and terms are essential to this business. Each dealer of building supplies shall order the shipment of materials in accordance with rules and regulations established by the various railroad regulating bodies, so that uniformity shall exist in rates, terms, minimum quantities and all other matters that affect the transportation of building supplies.

GEO Turnout Exhibited at Chicago

ONE of the features of the railway exhibit at A Century of Progress Exposition is a turnout of GEO construction, which comprises an adaptation to American standards of the GEO turnout used extensively in Germany. The installation, which consists of a complete No. 10 turnout, together with 500 ft. of GEO track, is being exhibited jointly by The Lorain Steel Company, the Carnegie Steel Company and the Illinois Steel Company, immediately south of the Travel and Transport building.

As described in detail in *Railway Age* for January 11, 1930, page 137, GEO construction embodies a combination of a special form of tie plate with independent fastenings of the tie plate to the tie and of the rail to the tie plate that effects a rigidity of assembly not obtained in ordinary track construction. The plate is fastened to the tie by means of four screw spikes. It is of wide and heavy rolled steel with high ribs on each side of the rail seat, each rib being milled to fit the semi-elliptical head of the clamp bolts. The rail is secured to the plate by means of two "U"-shaped clamps which straddle the ribs, one leg bearing on the rail base and the other on the tie plate outside the rib. Clamp bolts, which are inserted in the rib slots, are equipped with double coil spring washers and hold the clamps down on the rail base and tie plate. Compressed and creosoted wooden shims are inserted between the rail base and the tie plate. Among the advantages ascribed to this construction are the virtual elimination of rail creeping, reduced wear of ties and rail, a marked increase in the stiffness of track which insures better line and surface at a considerably reduced maintenance cost, a decrease in rail end batter, a reduction of shock by the use of wooden shims, and an increase of safety.

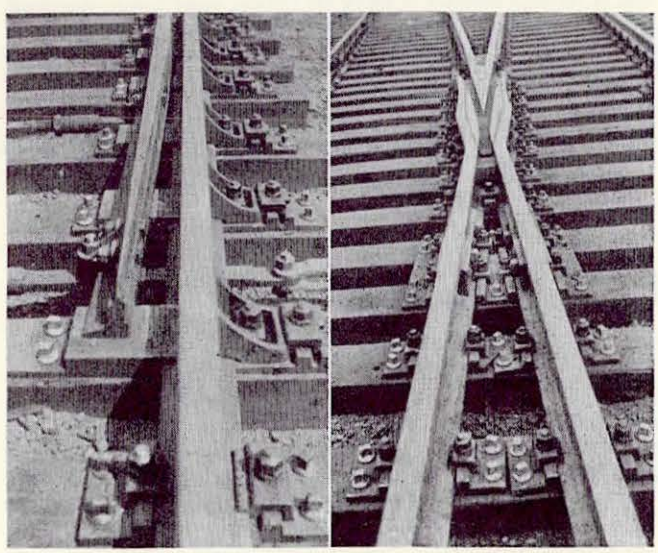
The No. 10 left-hand turnout installed at Chicago was made to conform to existing Illinois Central standards so far as practicable. Both the switch points and the frog are 15 ft. long and the latter is of the rail-bound manganese type. Guard rails are 11 ft. long and are of the kinked-rail type with flare chocks and guard rail clamps. The switch points are made of a special section, with a web about three times as thick as the normal tee-rail web, and are heat treated to increase their toughness and wear resistance. By reason of this extra thickness, it was possible to eliminate the reinforcing bars and the holes for them. The stock rails are under-cut to suit the inverted "V" shape of the switch points, this construction having been found to greatly increase switch point life. The switch rod clips are designed to insure a good fit over the base and against the web of the switch rail. They are annealed steel castings and the bottom is cored in such a way that it forms a lock to prevent turning of the clip bolt head.

The riser plate, gage plates, heel construction and the tie plates between the heel of the switch and the frog all embody the GEO principle of a ribbed plate, bolt and U-shaped clamp, with such modifications as were necessary to meet the requirements, clearances and other special conditions. Even the pressed-wood shim is employed wherever practicable. Where the rails are separated far enough to provide enough room, a separate plate is used under each rail; in other cases, where the rails are close together, one plate supports both rails, with single or double rib and clamp construction in the space between the rails to hold down the inside edges of the bases of the rails. The construction at the heel of the switch and at the connection of the frog to the adjoining rails is similar to that employed at rail joints in GEO track construction except that one plate supports the two rails at these points.

One of the most unique features of the design is that embodied in the riser plates and rail braces. Owing to the use of the special low section for the switch rail, the risers are so high that they are undercut to receive the inside edges of the base of the stock rail, which is thus held down effectively while providing a full flat bearing for the switch rail. The height of the risers is stepped down from 1¼ in. for the gage plate and the first four riser plates to ¾ in. at the heel. Owing to the undercut to hold down the stock rails, a clearance of ⅝ in. is provided between the edge of the stock rail base and the outside rib of the riser plates to permit the rail to be moved out to clear for releasing it from track, but this clearance is effectively closed, when the clamps are in place, by a lug ⅝ in. wide on the base of the clamp.

The construction of the rail braces is also noteworthy in that a separate clamp is provided inside the brace to hold down the base of the stock rail independent of the clamp that holds the brace in place. The brace is made adjustable by a special vertical wedge that fits between the tapered heel of the brace and a tapered rib near the outer edge of the riser plates.

Under the frog, between the heel and toe fillers, separate plates are provided on each tie, these plates having ribs on each end placed at the proper angle to fit the contours of the edges of the running and wing rail bases, the spaces between the ribs being filled with wooden shims. The guard rails are of the kinked type, employing cast steel flare chocks, held in position with one bolt each. A Lorain standard guard-rail clamp was placed opposite the frog point on each guard rail. The guard rail plates are of the two-ribbed type, utilizing the standard rolled clamps. The ribs are parallel to the running rail base and to the guard-rail base, the interval between the ribs being filled with wooden shims.



Two Detail Views of the GEO Turnout Construction

In the opinion of the engineers who developed the details of this turnout, the GEO fastenings will prove equally effective in railroad crossings, in that they will eliminate the creeping and slewing of ties and obviate the looseness and poor alignment which so often develops.

Elisha Lee Dies Suddenly

Illustrious Pennsylvania executive succumbs to apoplexy in New York

ELISHA LEE, vice-president of the Pennsylvania Railroad, was stricken suddenly with apoplexy just after he had alighted from a train in New York on August 6 and died shortly thereafter. Mr. Lee was returning from Saratoga Springs on the New York Central with friends and, because of a derailment blocking the line, Grand Central Terminal was closed to trains. Instead incoming trains were being operated to Ninety-sixth street, where passengers were being transferred to buses, and it was at this point that Mr. Lee was stricken.

Mr. Lee was born in Chicago on September 24, 1870. When he was seven years old his family moved to Trinidad, British West Indies, where he remained until 1883. He then attended the public schools of Binghamton, N. Y., and "The Gunnery," Washington, Conn. He completed his education at Massachusetts Institute of Technology, from which he was graduated in the class of 1892.

Elisha Lee

Mr. Lee entered the service of the Pennsylvania in November, 1892, as rodman in the office of the division engineer of the Tyrone division. From August, 1895, to October, 1897, he was on leave of absence from the service attending to personal affairs. He was appointed assistant supervisor in April, 1899, and served in that capacity on various divisions until April, 1901, when he was appointed supervisor.

In August, 1903, he was promoted to assistant engineer in the maintenance of way department. He was advanced to the position of principal assistant engineer of the Philadelphia, Baltimore & Washington (a P. R. R. subsidiary) on April 1, 1907. On March 24, 1909, Mr. Lee was appointed superintendent of the New York, Philadelphia & Norfolk (another P. R. R. subsidiary) and on March 3, 1911, he was made assistant to the general manager of the Pennsylvania Lines East of Pittsburgh. He was appointed general superintendent of the Philadelphia, Baltimore & Washington on April 1, 1914.

Mr. Lee served as chairman of the Conference Committee of Managers of the Eastern Railroads from December, 1912, to 1914. In that position he had personal charge, on behalf of various railroads interested, of the negotiations with the railroad labor organizations, and of the presentation of the railroads' case in the arbitration of the wage demands made by the firemen, trainmen and conductors. Later, he served as chairman of the National Conference Committee of Managers, in which capacity he conducted the negotiations between the railroads and the four train service brotherhoods in connection with their demands for an eight-hour day.

On May 1, 1916, in connection with the enlargement of the organization of the operating department of the P. R. R. Lines East of Pittsburgh, Mr. Lee was promoted to the newly created office of assistant general manager, and on April 1, 1917, he was appointed general manager. In 1917, after Vice-President W. W. Atterbury went to France, Mr. Lee assumed his duties, and on August 20, 1917, the board of directors appointed him acting vice-president in charge of operation. Mr. Lee resigned from the service of the Pennsylvania on June 1, 1918, when he was appointed federal manager of the Pennsylvania Eastern Lines, under the jurisdiction of the regional director of the Allegheny region, United States Railroad Administration.

On March 1, 1920, at the termination of federal control, the Pennsylvania was reorganized, and Mr. Lee was appointed vice-president in charge of the Eastern region, with headquarters at Philadelphia. On October 24, 1923, he was appointed vice-president in charge of the Central region, with headquarters at Pittsburgh, and on November 15, 1924, he was appointed vice-president in charge of operation of the entire system. In September, 1926 the directors elected Mr. Lee to the position of vice-president, a newly created position. On April 10, 1929, he succeeded the late Samuel Rea as a director. Mr. Lee was also a director of various subsidiary companies of the Pennsylvania and a director of the Norfolk & Western, the Central National Bank of Philadelphia and the Equitable Life Assurance Society. He was a manager of the Girard Trust Company and the Western Saving Fund Society of Philadelphia.

General W. W. Atterbury, president of the Pennsylvania in commenting upon the death of Elisha Lee, said:

"I know of no words to express the sense of personal loss occasioned by Mr. Lee's wholly unexpected death. Our relations had been extremely close for many years and I constantly relied upon his counsel and advice in the responsibilities which we shared. By reason of natural capacity, thorough technical education and long experience, Elisha Lee possessed all of the characteristics of an executive officer of the highest type. Beyond that he had something still more rare—an unmatched personality which I have no hesitation in saying made him the best beloved man in his calling. He had friends beyond number, and in every walk of life, but not an enemy in the world. I never heard of anyone who knew Mr. Lee in any capacity who did not become completely attached and devoted to him.

"To the Pennsylvania Railroad, Mr. Lee's work and

services over his career of forty-one years were invaluable. His exceptional gifts were also freely used for the benefit of the railroad industry as a whole, including its employees of every rank.

"In transportation circles, Mr. Lee was universally recognized as the foremost railroad executive in dealing with questions of employee relationships. He has done more than any other man that I could name to maintain those relationships upon a friendly and mutually loyal basis and to promote harmony between men and management. His success in this important work was largely due to his patience, his never failing kindness, his winning smile, his straightforward methods and the fact that leaders among railroad labor, without exception, had complete confidence in his integrity and absolute fairness. Among them were counted many firm friends of long standing.

"Mr. Lee believed in seeking the truth, in hewing to the line and letting the chips fall where they would, and in even-handed fairness and justice to all. He practiced those principles consistently throughout his life."

The Burden of Defective Rails

By C. W. Gennet, Jr. *

FROM the rail failure statistics for the calendar year 1931, contained in the latest report of the Rail Committee of the American Railway Engineering Association, coupled with other data covering the operation of Sperry detector cars for that year, it has been possible to obtain important figures indicative of the number of defective rails found in the United States and Canada. Thus the total of transverse and compound fissured rails reported was as follows:

Found by Sperry-operated detector cars was	5,012
Found by A. R. A.-operated detector car approximated	421
Reported as occurring in service approximated	4,795
Total	10,228

If we assume these rails to average 100 lb. per yard and 39 ft. in length, it means that nearly 6,000 tons of rail, or 40 miles of track, were required for the replacement of the known cases of transverse fissured rails found and reported.

But even that rather surprising tonnage represents only a part of the total defective rails, for, in locating the fissured rails mentioned, detector cars also found approximately 17,577 rails containing other types of defects, most of which had to be replaced almost as promptly as the fissured rails. In addition, practically 10,000 other rail failures were reported as having occurred in rails of 1 to 5 years age, which is the service period selected by the A. R. E. A. as the basis for its rail failures statistics, so that some 27,577 rails, amounting to 16,000 tons, were required for replacement of these defective rails, in addition to the fissured rails. Therefore, a total of 22,000 tons, or nearly 140 track miles, was the obvious minimum required for replacement in 1931. Incidentally, this was about two per cent of all the rail of 85 lb. and heavier sections rolled in 1931 and six per cent of that tonnage rolled in 1932.

One could speculate much more with these figures. They become larger when estimates are made of what might have been found if all real main line tracks had been tested by detector cars, as they were on some roads. Also, if all rail failures on all of the roads had been reported, the actual results would have been still larger. And if the number of rail failures found in rails of more than five years' service age were known and added in, the grand total of defective rails that it was necessary to replace would be quite astounding.

Accident Bulletin No. 100 of the Interstate Commerce Commission shows that in 1931 there were 251 train accidents due to some condition for which defective rails were given as the primary cause. These resulted in the death of 9 persons and injuries to 126 others. In all probability the rails causing these accidents were included in those mentioned above, so that, aside from their mere replacement, it is easily seen that some of the defective rails assumed serious aspects.

More Data Needed

Unfortunately and regrettably, the Rail Committee's statistics for a number of years have not separated the failed rails reported into the various classes of commor types of failures. With the exception of special tables covering transverse fissured rails, it is impossible from the published data to determine how great a burden to the railroads head failures or web failures or base failures may be. Nor does it appear desirable under present practice dealing with the modern heavy section open-hearth steel rails to regard their life with respect to failures as being of only five years, as is done by the A. R. E. A. in compiling its rail failure statistics. Certainly thousands of failures occur after the five-year period has passed, and the good or bad records of various rails may be influenced greatly by what happens in a few later years of service.

Rail failure statistics, to be of the greatest value, should show not only the ranking of the mills rolling the rails, but such subdivisions of a geographical character (and perhaps weights of sections) as would permit of fairly definite information bearing on the principal types of defective rails that occur in a reasonable life of, say, ten years. Obviously, if the hazard of each of the common types of rail failures was identical, the economical importance of each type would depend on the number of each that occurred under different common conditions of service, and rail failure statistics really should be directed with that end in view. The absence of such detailed data, especially since the use of the heavier section rails of open-hearth steel became common, has tended undoubtedly to somewhat overemphasize the occurrence of fissured rails and to so becloud the importance of head or web or base failures as to make those types of defects seem relatively inconsequential. In this connection it would seem desirable also that the terms used in the Interstate Commerce Commission's statistics be co-ordinated more closely with the Rail Committee's practice and definitions in order to make possible a better comparison, year by year, of the two sets of data and a more complete understanding of the damage actually caused by defective rails from a real operating standpoint.

As a matter of fact, statistics resulting from the operation of Sperry detector cars in 1931 show that the defective rails located by the cars consisted of

Transverse and compound fissured rails	24.1 per cent
Horizontal split heads	36.1 per cent
Vertical split heads	32.4 per cent
All other types of defective rails	7.4 per cent
Total	100.0 per cent

No doubt, some of the compound fissured rails in this grouping were really horizontal split heads in their earlier life, and, if it were practicable to do so, they should be charged as such. Compensating somewhat for that, means that transverse fissured rails found by

* Vice-President, Sperry Rail Service, Chicago.

the detector cars comprised about 22 per cent of the total and head-failed rails about 70 per cent, while the remaining 8 per cent consisted chiefly of web and base failures. These figures are in fair harmony with the estimates first given above, wherein it is shown that 6,000 tons of defective rails were actually fissured and 16,000 tons otherwise defective. But, even more pertinently, the figures confirm unmistakably the old and well known fact that head failures constitute a very troublesome and costly burden, for, without doubt, a minimum of 14,000 tons of rail were required to replace them in 1931.

It has been conceded for a number of years that defective rails can be divided into two great classes: viz., those defective because of internal transverse fissures, and those defective because of some condition affecting the head and aptly termed head-failed rails. These include, of course, horizontal and vertical splits, crushed, mashed and flowed-head rails. Web failures and base failures, comprising the third and fourth classes, appear to be quite negligible in comparison with other failures and are commonly regarded as incidental and fairly well controlled evils. Fissured rails unquestionably constitute the greatest menace to safe transportation of any type of rail defect, but they, thankfully, appear from the data cited above to be less abundant than defective rails of other types. There are probably three split head rails to one fissured rail; yet by drawing on the imagination somewhat it may be inferred from the Interstate Commerce Commission's statistics that there were about 80 times as many train accidents due to fissured rails as there were due to head failures. But what can be done, or what is being done, to reduce the apparently large burden that fissured rails and head-failed rails inflict on the railroads?

Precautions Necessary

The primary cause of fissures is still an undetermined problem. Ample evidence exists, and is being augmented almost daily, to show that fissures grow under traffic from some condition, or nucleus, contained in the new rail when it leaves the mill. Neither steel nor track conditions, neither section nor weight, appears to promise immunity. Fissures are found in very young as well as very old rail. No track seems to be absolutely beyond suspicion, for frequently that which is thought free from fissures today is rich with them tomorrow.

Three direct methods of protecting the traffic against disaster from the constantly threatening menace are available. First, of course, is the eternal vigilance of all trackmen; secondly, the value that automatic signal systems possess of stopping traffic when the track circuit has been broken by a ruptured rail; and, thirdly, the indisputable value that detector car testing offers. The first and second methods obviously are efficacious only when the fissure has become visible by having grown to the surface, or, as mentioned, when complete rupture of the rail has occurred. Neither offers any protection whatsoever against sudden rupture, directly under a train, caused by small fissures, or even large ones, that are entirely internal. By using the third method of attack, the concealed fissures, large and small, can be located and the hidden menace greatly reduced; and if such testing is repeated at sufficiently frequent intervals, maximum safety of the rails can be assured constantly. For the primary cause of fissures, and the adoption of preventive measures at the mill, judgment must await the report of the Joint Committee now energetically engaged in studying the subject at the University of Illinois.

Head-failed rails present an entirely different picture. As already mentioned, they offer no such hazard as fissured rails, very largely because they invariably give some visual sign that warns the trackmen of impending risks and so permits their removal before fracture occurs. But here, too, detector car testing in the search for fissures finds many cases of concealed splits that, while giving no surface warning, are sufficiently hazardous to warrant replacement. Head failures are almost invariably found in the one or two rails made from the tops of the ingots, though not infrequently bottom rails are likewise defective. It has been shown repeatedly that chemically and (or) physically sound steel is closely allied with split heads and those crushed or mashed or flowed. It has been known for years that generous relief from head failures is easily possible by simply increasing the usual discard from the ingots, but for that the manufacturers charge a premium which the railroads usually refuse to pay. Consequently, a relatively small proportion of "A" and "B" rails, always known to be of doubtful character, is directly responsible for a very large number of head-failed rails.

Rails have been sold mostly on a purely "run of mine" basis for many years, the only reduction from the standard price being for a small quantity of flawed rail. Times are opportune and conditions obviously such that a generous revision of practice in this respect seems warranted. New provisions should be made that will relieve the railroads more largely of the burden imposed by the cost of defective rails caused by abnormal steel.

Communications . . .

As To Passenger Fares

WASHINGTON, D. C.

TO THE EDITOR:

In your issue of July 29, Berkeley Robins attacks the difficult problem of determining how far it would be to the interest of the railways to reduce passenger fares. Without expressing any opinion as to the advisability of reducing passenger fares now, I question whether the result reached by Mr. Robins gives any clue as to the proper policy to be pursued, and that for the following reasons:

(1) Even if one expresses accurately in an equation the concurrent past fluctuations in per capita passenger-miles and passenger-mile cost, it is hazardous to connect these two variables as cause and effect in the sense that a variation in the unit cost will produce the effect on volume indicated by the equation. It is true, for example, that in the years 1900-1914 a downward trend in the unit cost was accompanied by a certain upward trend in the volume, but it may well be that the unit cost was in this case like the proverbial fly on the hub of the wheel, which said, "See what a dust I raise." This period was one of rapidly expanding business activity before the competition of motor vehicles was felt, and it is probable that per capita passenger travel would have markedly increased in this period with a stationary or even somewhat rising unit cost to the traveller. In other words, a true demand curve cannot be derived from figures of this kind.

(2) The study deals with maximum gross revenues, whereas the railways are aiming at the maximum net revenues.

(3) The study assumes a uniform price for each passenger-mile. It is the practice at present, although this may not be in the best interest of the public, to try to classify passengers by means of excursion and bargain fares. To reduce all fares to 1.75 cents a passenger-mile might greatly reduce the gross revenues.

(4) In deriving demand curves for passenger service, it seems highly desirable to separate commutation from other passenger travel. Commutation passenger-miles are now a large part of

the total (over 27 per cent in 1931) and certainly must have a considerably different demand curve from that of regular passenger travel. From 1922 to 1929 commutation passenger-miles increased 12.50 per cent while other passenger-miles decreased 17.70 per cent. The average price per unit was practically stationary for commutation, but declined 4.02 per cent for other passenger travel in this period. This separation was not made in our statistics before July, 1921.

Perhaps when specific results of many experimental reductions in fares to stimulate travel are available for some normal years, it will be possible to analyze the effect of fare changes on volume of travel in a more reliable manner. However, the article by Mr. Robins is of interest and value from the standpoint of method.

M. O. Lorenz.

Scientific Examination of the Passenger Fare Level

New York.

To the Editor:

The discussion of the relation between passenger rates and revenues by Berkeley Robins in the *Railway Age* of July 29 is to be commended as an attempt to apply scientific methods to a problem which is extremely intricate and controversial.

Everyone will admit that the cost of passenger fares influences the amount of travel on the railways. Comparisons based on the purchasing power of the dollar are more logical than those based on actual fares and revenues. But, since the amount which individuals would be inclined to spend for passenger transportation depends on the amount by which their incomes exceed the subsistence level, such studies might give more accurate results if they took into consideration also the variation in real income and its distribution. The rise in Mr. Robins' index of use from 1900 to 1914 may be partly due to the increase in the national income during that period.

Even if this factor is disregarded, some of the author's conclusions seem open to question. The vertical position of curve VII at the left side of the chart may vary considerably, depending on the relative importance assigned to the points for the group of pre-war years 1915, 1916 and 1917 and the years in which travel was influenced by the war, 1918, 1919 and 1920. Probably a considerable amount of passenger traffic in the latter years was due to the conditions produced by the war. If curve VII was made to approach more closely to the points for the former years, the index of use at zero fare would be decreased. This would cause an increase in the index of cost which would produce maximum revenue, with a decrease in the corresponding index of use and index of revenue. Mr. Robins has assumed the index of use at zero fare to be a constant. This is probably incorrect, and if the value of this index changes materially over a few years, a line such as curve VIII, based on only three years, could not be located from another, such as curve VII, based on a much longer period, unless the change in the index of use at zero fare was determined.

The many special passenger rates which the railroads have made since 1931 should soon afford an opportunity to determine the effect of a reduction in the index of cost on the index of use. It is to be hoped that the reduction will result in an increase in the index of revenue as well as an increase in the index of use and substantiate the conclusions Mr. Robins has reached from the trend of 1929 to 1931.

A. F. Stuebing.

Odds and Ends of Railroading . . .

Pullman Displays Increasingly Popular

With 30 people to car, it would take a train of 210,629 Pullman sleepers to accommodate the 6,318,881 visitors who have inspected the Pullman Company's exhibits in the Pullman building at Chicago and at various railway stations throughout the country, since the first display was opened in March, 1931.

Tin Foil by the Carload

An unusual carload of freight, consisting of 100,000 lb. of tin foil, was recently handled by the Northern Pacific from Spokane, Wash., enroute to Chicago. The carload of foil represented the collection of thousands of adults and children in the vicinity of Spokane during the last few years, and it will be sold to provide funds for the Shrine hospital for crippled children. El Katif Temple, Spokane, was the shipper.

Mountain Children Introduced to Railway Travel

The Chesapeake & Ohio, represented by General Agent E. B. Loving and Yardmaster W. A. Bonavida of Charlottesville, Va., was host recently to a group of Virginia mountain children who experienced for the first time in their lives the pleasure of a ride on a train. The children were pupils in a school at McMullin, in the Virginia mountains, and arrangements for taking them to Charlottesville were made by Mr. Loving as a special treat before the school term closed. At Charlottesville, the children were shown through a restaurant car of the Chesapeake & Ohio's "George Washington" and were taken by train from the C. & O. station to the Southern station and back again. It was a great day for the youngsters, especially appreciated by one small boy who announced when he got home, "I went to ride on a train and seen the gold plate that George Washington et on."

Frisco Employees Are Business Getters

When it comes to getting freight and passenger traffic for their railway, the Frisco Employees' Clubs do not appear inept even by comparison with the regular traffic soliciting organization of the railway. The traffic department recently made a recapitulation of the business secured by members of the various Frisco Employees' Clubs throughout the system during the first six months of 1933, to find that 1,878 carloads of freight, 6,619 l.c.l. freight shipments and 573 passengers were secured for the railway by the employees. These figures represent actual business secured and not mere tips on prospective business. The traffic secured by the clubs of some of the smaller points is especially notable. For example, the Clinton, Mo., Club, with a small membership, had a record of 18 cars, 760 l.c.l. shipments and 5 passengers. Outstanding results were secured also by the Afton, Okla., and Lebanon, Mo., organizations. At Afton, 70 carloads of freight, 1,285 l.c.l. shipments and 65 passengers were secured for the railway, while at Lebanon, 198 carloads of freight and 1,359 l.c.l. shipments were successfully solicited.

President Needles a 50-Year Veteran

July 1 marked an important milestone in the life of President A. C. Needles, of the Norfolk & Western. On that day, he celebrated the completion of fifty years of service with the railway and received the diamond insignia of the Norfolk & Western Veterans' Association. The presentation, which took place in Mr. Needles' office in Roanoke, Va., was made by David W. Flickwir, chairman of the executive committee of the Norfolk & Western, who has been closely associated with Mr. Needles throughout the entire 50-year period. In presenting the diamond button, Mr. Flickwir said that a study of the careers of the presidents of 82 Class I railways showed that only 11 of them have had a total of 50 years or more in railway service. Only one, besides Mr. Needles, has served the same road for as many as 50 consecutive years. Mr. Needles entered the service of the Shenandoah Valley Railroad, now part of the N. & W., on July 1, 1883, transferring to the operating department as a yard clerk the following year. His rise was steady through the positions of yardmaster, trainmaster, superintendent, general superintendent, general manager, operating vice president and Federal Manager. Mr. Needles became president of the N. & W. on May 1, 1924.

NEWS

Further Appointments to Staff of Co-ordinator

Eastman also discloses salaries paid to all aids getting more than $4,000

Commissioner Joseph B. Eastman, Federal Co-ordinator of Transportation, has announced additional appointments to his staff. Initial appointments with biographical sketches were published in the *Railway Age* of July 17, page 117. The new appointments are as follows:

N. D. Ballantine, Asst. Director, Section of Car Pooling
Walter Bockstahler, Asst. Director, Section of Transportation Service
Edward M. Johnson, Assistant, Section of Transportation Service
Arthur F. White, Assistant, Section of Transportation Service
Robert C. King, Assistant, Section of Transportation Service
Carroll W. Brown, Assistant Director, Section of Purchases
George A. Cooper, Assistant, Section of Purchases
H. P. Dalzell, Assistant, Section of Purchases
Charles S. Morgan, Research Staff
Norman D. Haley, Research Staff
F. R. Bell, Research Staff
P. A. Conway, Research Staff
H. D. Folsom, Research Staff
R E. Freer, Research Staff
W. L. Fulton, Research Staff
L. T. Paxton, Research Staff
Warner Tufts, Research Staff
T. K. Urdahl, Research Staff
H. C. Wilson, Research Staff

Messrs. Morgan and Haley are employees of the Interstate Commerce Commission, and their services have been loaned to the co-ordinator. Messrs. Bell, Conway, Folsom, Freer, and Fulton are furloughed employees of the Commission's Bureau of Valuation.

Mr. Eastman has also made public the salaries paid to many of his staff. His statement in this connection reads as follows:

"Inquiries have been made as to the salaries which the assistants of the co-ordinator are receiving. Work with the co-ordinator is temporary in character. His term of office ends on June 16, 1934, unless extended, for a period not longer than one year, by the President. The research work preliminary to recommendations for legislation will be even shorter in duration, and in most instances is not likely to extend beyond November 1, 1933. Because of the temporary character of the work, considerable expense is involved for assistants who have been obliged to make their headquarters at Washington, New York, Chicago, or Atlanta and at the same time maintain homes elsewhere. The co-ordinator, also, has found it necessary to secure the assistance of men with a high degree of skill and experience and of recognized standing in railroad work, but has not thought it wise to attempt to draft the services of executives of the larger railroads who might afford to serve the government regardless of compensation. The reasons are obvious. Salaries have been affected by these and other considerations.

"The salaries which are at a rate in excess of $4,000 per year are as follows:

V. V. Boatner, Western Regional Director	$15,000
H. J. German, Eastern Regional Director	15,000
C. E. Weaver, Southern Regional Director	15,000
J. R. Turney, Dir. Section of Transportation Service	15,000
M. M. Caskie, Southern Traffic Assistant	8,500
W. H. Chandler, Eastern Traffic Assistant	8,500
C. E. Hochstedler, Western Traffic Assistant	8,500
R. L. Lockwood, Director, Section of Purchases	7,500
O. C. Castle, Director, Section of Car Pooling	7,500
J. W. Carmalt, Executive and Legal Assistant	7,500
J. L. Rogers, Executive Assistant	7,500
N. D. Ballantine, Asst. Dir. Section of Car Pooling	6,000
W. Bockstahler, Asst. Dir. Sect. of Transportation Service	6,000

(*Continued on page 256*)

A Suggestion to the NRA

One section of the decision [refusing to order a general reduction in freight rates] is of special interest. In it the commission recants certain views it expressed at the time of the Fifteen Per Cent Case in 1931. It then believed that the railways would lose little to competing motor carriers except short-haul less-than-carload traffic and that water carriers would take principally low-grade freight. "Time has disproved both of these beliefs." Rival carriers are now taking "the cream of the railroads' traffic," and "unrestrained and destructive competition" is not only depressing railway revenues but "tending to prevent the maintenance of a stable and non-discriminatory rate adjustment."

Until Congress meets next January nothing can be done by legislative action to change this situation. But there remains the NRA. Why is it not possible to establish a code of fair competition for the transportation industry as a whole, which, while protecting the legitimate interests of all of its component parts, would remedy the conditions of which the commission complains? The government, and the public generally, would gain from any move which reduced the railways' need of federal loans and simultaneously helped restore their potentially enormous purchasing power.

From the New York Times

The Regional Committees Must Take Leadership

Eastman warns that "general committees" are device to avoid protecting jobs

Joseph B. Eastman, federal co-ordinator of transportation, has addressed a communication to the three regional co-ordinating committees suggesting that the setting up of "general committees" in each region independently of the co-ordinating committees "has the earmarks of a device to avoid the provisions of section 7 (b)" of the Emergency Transportation Act, this being the clause prohibiting the reduction in the number or compensation of employees by reason of any action taken pursuant to the authority of the act.

In order to keep "entire good faith" with the President and Congress, Mr. Eastman gives his opinion "that projects for economy which are found to require consideration by committees of carriers of any region collectively should be handled as the Act contemplated" through the regional co-ordinating committees.

"With a view to accomplishing this result," the communication continues, "I deem it my duty now to refer to the regional co-ordinating committees for investigation and report all projects within their respective regions which are embraced under certain general heads listed in the appendix hereto. They cover matters which, as my regional directors have found, the general committees are now investigating or propose to investigate. They do not include projects which may be undertaken by individual railroad systems in ordinary course of management, but are confined to projects which require co-ordinated action by two or more separately operated carriers. Nor do they include projects which have been consummated, or those which are about to be consummated under arrangements which have been completed. The object which I seek to achieve is that the regional co-ordinating committees shall assume the leadership and responsibility which the Act intended that they should assume, and take charge of the general committees.

"Two things may be said of economies in railroad operation and management which involve reduction in railroad employment. From a long-range point of view I am fully persuaded that it is essential to the welfare of railroad investors, of railroad labor, and of the country generally that the railroads should be operated with the utmost possible economy. From a short-range point of view, there is another aspect to the matter. The country is now

engaged in a great and concentrated effort to pull itself out of the mire of depression by increasing employment, lifting purchasing power, increasing production, and sustaining it through the force of greater consumption. At such a time it may be well that projects for economy at the expense of labor should be postponed, so that they may not in any way conflict with or imperil the supreme effort toward recovery which the nation is now making.

"Such a postponement need not and should not prevent the survey and search for all possible economies in railroad operation, consistent with good service, upon which we have embarked, and I have every confidence that the results of this endeavor will eventuate to the benefit of all concerned.

"It may be, also, that certain projects can, with advantage, be undertaken subject to the restrictions in the labor clause, and that these restrictions will permit the economy to be realized gradually."

The projects upon which the co-ordinating committees are asked to report are as follows:

PROJECTS FOR JOINT ACTION BY TWO OR MORE SEPARATELY OPERATED CARRIERS

Unification of Facilities, including

1. Unification or joint use of terminal facilities, particularly at the larger terminal centers, but also at the smaller common points. Terminal facilities include, among others, yards, team tracks, stations (both passenger and freight), ticket offices, accounting offices, general offices, telegraph facilities, freight houses, icing facilities, round houses, lighters and tugs, warehouses, docks, elevators, coalpiers, and produce terminals.
2. Unification or joint use of shops, including among others, back shops, engine terminals, and other places where repairs are made.
3. Unification or joint use of other facilities, such as tie-treating plants, stone-crushers, ballast pits, quarries, power plants, storehouses, scrap and reclamation yards, etc.

Unification of Service.

1. Arrangements for the consolidation or pooling of traffic or train service, freight or passenger.
2. Arrangements for the consolidation or pooling of other forms of service.
3. Discontinuance of unduly circuitous or otherwise uneconomical routes.

Note: Projects which have been consummated are not to be included, nor projects for the consummation of which arrangements have been completed.

Strike Vote in Canada

Faced with the refusal of the Canadian railways to reconsider the 10 per cent additional wage reduction which went into force on May 1, and authorized by the consent of their general committees to take a strike ballot among the membership of the trainmen's, enginemen's and telegraphers' unions throughout the country, the general conference committee of these organizations in Montreal last week announced their determination to take a strike referendum immediately.

In May, while the unions were still conducting negotiations with the companies, the Minister of Railways and the Minister of Labor, the possibility of a strike was not even considered by the union leaders, although its shadow hung continually in the background. It will take at least a month or six weeks for the ballot to reach every man in the various services and for the results to be tabulated.

Meetings will be held in Montreal of shopmen, maintenance of way men and signalmen, with further meetings of these unions and the companies to follow. It is definitely stated that the shopmen will not consent to the added ten per cent cut. The union leaders assert that this unanimous action on the part of all the railway labor organizations will precipitate co-operation of all the standard railway labor unions, which has been lacking before, and that all will be prepared to strike in the fall at the railway's busiest season if their demands are not complied with.

Further Reductions in Tie Stocks

Continued reductions in the number of crossties in the hands of tie producers for railway consumption are reflected by the inventories reported to the Railway Tie Associaton by companies handling approximately 85 per cent of the commercial output. On July 1, these companies accounted for 4,948,758 crossties. This was approximately 7 per cent less than the quantity in stock on June 1, 14 per cent less than the stock on January 1, and 27 per cent less than the stock on July 1, 1932, and represents a steady decline month by month since the commencement of records on January 1, 1932, the stock at that time amounting to 8,638,999 ties.

Of the total stock on July 1, 325,296 ties were for use untreated, 3,739,628 were oak ties for treatment and 883,834 consisted of other species for treatment. These stocks are contrasted with 451,180 ties for use untreated on January 1, 1933, and 504,417 on July 1, 1932; 4,160,711 oak ties for treatment on January 1, 1933; and 4,640,430 on July 1, 1932; and 1,133,808 ties of other species on January 1, 1933; and 1,575,538 on July 1, 1932. The number of 8-ft. ties was 3,085,724 on July 1, as compared with 3,761,784 on January 1, 1933 and 4,472,555 on July 1, 1932; while ties 8 ft. 6 in. in length numbered 1,863,034 on July 1, 1933, as compared with 1,983,815 on January 1, 1933, and 2,247,830 on July 1, 1932.

Of the ties in the hands of reporting companies on July 1, 2,316,068, or 47 per cent, were stored in the district comprising the states of Kentucky, Tennessee, Alabama, Mississippi and that part of Louisiana east of the Mississippi river. This stock contained 2,301,369 ties on June 1, 1933, and 2,750,258 ties on July 1, 1932. The next largest stock on July 1, amounting to 1,502,978, or 32 per cent of the total, was reported by the district comprising the states of New York, Pennsylvania, New Jersey, Delaware, Maryland, Ohio, Indiana and Illinois. This stock contained 1,581,654 ties on June 1, 1933, and 2,109,224 on July 1, 1932. The next largest stock, consisting of 913,744 ties, was reported by the district comprising the states of Nebraska, Iowa, Kansas City, Oklahoma, Arkansas, Texas and the western part of Louisiana, this stock being compared with 1,216,069 ties on June 1, 1933, and 1,414,993 ties on July 1, 1932.

20 Years Without a Passenger Killed

The Gulf, Mobile & Northern has operated, since its formation in January, 1917, and its predecessor, the New Orleans, Mobile & Chicago, since January, 1913, without a passenger having been killed. Within this period, 1913 to 1932, 10,161,289 passengers have been carried and they have traveled a total of 254,222,438 passenger-miles.

Roads Urged to Re-employ Men, Increase Maintenance

Co-ordinator Eastman says deferred maintenance work "sorely needs to be done"

The Federal Co-ordinator of Transportation, Commissioner Joseph B. Eastman, on August 3 sent the following telegram to the president of every Class I railroad:

"Reports to me indicate that the railroads have restored about 40,000 men to work since June 1. This is good, but is it all that can be done? A country-wide drive is on to increase employment, build up purchasing power, increase production, and sustain it by consumption. If all pull together this drive will succeed, but it may fail if some hang back. The railroads will gain directly and immediately if it succeeds, and they have much deferred maintenance work which sorely needs to be done. Money spent for such work will be well spent and consistent with economy.

"I strongly urge that the railroads spend every available dollar in putting men back to work and in so doing their part in the drive they will I believe serve their own interests as well as those of the country. Further economies in operation, without impairment of service, must not ultimately be neglected, but the immediate need of the country is the return of men to work. I have every reason to believe that the railroad executives sympathize with this point of view and will cooperate." The railroads have also in a considerable number of instances increased the hours of employment of men already at work.

According to a later statement by Co-ordinator Eastman, advices from all the Class I railroads except the Toledo, Peoria & Western show that the net number of men returned to work since June 1 is 65,268. The 5,536 men returned to work by the Baltimore & Ohio were not segregated in its report by classes. Omitting these, the reports show 22,942 men returned to work on maintenance of way and structures, 17,214 on maintenance of equipment, and 19,696 in all other classes of employment. The New York Central system leads the list with 19,341 men returned to work. Next comes the Baltimore & Ohio with 5,536, and then the Pennsylvania system with 5,132.

"Responses from many of the roads," said Mr. Eastman, "indicate a general desire to return men to work as rapidly as needed work and finances permit. It is probable that the number returned will be materially increased if present business is maintained. The responses also indicate that there have been many instances where men already on part time have had their hours of work increased, and that the roads are increasing their purchases of materials and supplies."

Roads other than those mentioned which reported 1,000 or more men re-employed since June 1 include: Santa Fe, 1,453; Chesapeake & Ohio, 2,346; Burlington, 1,046; Rock Island, 2,865; Milwaukee, 2,771; Erie, 1,324; Great Northern, 3,485; Illinois Central, 2,731; Louisville & Nashville, 1,242; Southern Pacific, 1,581; Union Pacific, 1,187.

Reparations a "Racket"? Inquires Woodlock

Former commissioner finds practices of I. C. C. contravene common law

Former Interstate Commerce Commissioner Thomas F. Woodlock, writing in the Wall Street Journal, raises a question as to the whole procedure of awarding reparations in I. C. C. rate cases. Not only does he point out the abuses which the commission itself has recognized but he calls into question the practices of the commission in dealing with these cases.

"There is" he writes, "one phase of railroad law and railroad regulation which is badly in need of reform, yet is, unfortunately, most unlikely to get it—reparation. This writer will hazard once more in the faint hope that possibly something may be done to cure what he unhesitatingly characterizes as a continuing abuse. That is the use of the Interstate Commerce Commission's forum as it has for many years been used, and is still being used, as machinery for collection of 'damages' for alleged 'unreasonable' or 'inapplicable' rates paid by shippers. He indicts that use on the following grounds:

"First, that in the treatment of claims for 'damages' under Section 1, which prohibits the collection of 'unreasonable' rates, the commission has, in fact, so relaxed the common law principle (that 'damages for tort' must be proven) as to approach, at times, something like a 'presumption' of the very thing which the law requires to be proved—which is the 'unreasonableness,' in fact, of the rate.

"Second, that in the treatment of claims for 'damages' under Section 6, which prohibits collection of rates for which there is no tariff authority, the commission has at times so strained the principle of strict tariff construction 'against the maker' as to produce results repugnant to justice and common sense.

"Third, that as a result of this policy, carried on over a series of years, claims for 'reparation' have clogged the commission's dockets to the extent of providing two-thirds of the rate-cases which absorb so enormous a proportion of the commission's time.

"On the first count this writer asserts that, notwithstanding many exceptions to be found in the commission's reports, both in the form of majority decisions and minority expressions, the commission has in a great many cases held that a reduction of rates ordered *for the future* (a quasi-legislative act) necessarily implied a condemnation of the rate *for the past* (a quasi-judicial act) and required an award of damages, i. e., 'reparation,'

"In proof of this it is perhaps sufficient to point out that the commission carried to the Supreme Court an order of reparation against a carrier which charged a rate no greater than the commission had itself prescribed as a 'maximum reasonable rate' only two years previously! This was the *Arizona Grocery Case*. The court voided the commission's order. The fact that it made such an order in the first instance, and that it defended it to the end, is conclusive as to its concept of 'reasonableness for the past,' and this writer submits that that concept is often tantamount to presumption of something which should be proved.

"On the second count this writer asserts that, notwithstanding many exceptions to be found in the commission's reports, both in the form of majority decisions and minority expressions, the commission has applied the principle of strict construction of tariffs in the matter of the 'intermediate rule,' 'rule 77' and the old 'tariff circular 5 (b) rule' in a multitude of cases so as to produce manifestly inequitable results.

"In proof of this it is sufficient to recall the notorious *Standard Oil Cases* (Nos. 15,877 and 15,878, 139 I. C. C. 297) in which the 'intermediate rule' and the 'Jones Combination rule' were invoked to justify claims for reparation estimated at over $25,000,000. Notwithstanding the glaring inequity and manifest absurdity of these claims, they were supported by a long line of precedent rulings by the commission in the light of which they were inexpugnable, and it was by only a narrow majority—7 to 4—that the commission finally disregarded its precedents and rejected the claims. The facts concerning these cases are sufficient to indicate the concept entertained by the commission as to tariffs and their construction. (It is but fair to say, however, that the principal tariff circular rules on which many of these claims were based have now been changed.)

"As to the third count, the commission's own reports speak for themselves. The strange thing is that as far back as 1916 the commission described the 'reparation' business in terms for which the modern word 'racket' would be the most appropriate designation, and has several times since so referred to it. It has recommended a drastic curtailment of the 'statutory periods' during which 'damages' accrue. Notwithstanding this, its practice has been as above indicated. It is safe to say that today there are multitudinous 'commerce lawyers' and bureaus auditing freight bills all over the country in the hope of discovering grounds for damages, and 'contingent fees' on 'business' of this sort sometimes take two-thirds of the sums recovered.

"It is now well over 20 years since every railroad rate charged has been subject to review by the commission. It is not time to inject into this matter something that will bring the collection of this kind of damages into a more 'reasonable' accord with the common law principle of 'damages for tort' and the practice of the courts?"

Barge Line Protests Against Lower Railroad Freight Rates on Sugar

The Mississippi Valley Barge Line Company, a private corporation, has filed a suit in the United States District Court in St. Louis, Mo., attacking the recent action of the Interstate Commerce Commission in approving a lower railroad freight rate on sugar shipped from Gulf of Mexico ports to various middle western states, contending that the new rate is ruinous to inland water transportation. The court is asked to issue an injunction to prevent enforcement of the rates and also an order setting aside the commission's order approving the rates.

The petition charges that the purpose of the railroads in lowering sugar rates is not to meet competition but to cripple or eliminate the barge lines operating along the Mississippi and Ohio rivers and their tributaries. The railroads have been charging 52 cents per 100 lb., compared with the rate of 37 cents to 42 cents charged by the barge lines. The railroad then asked for a rate reduction of 28 cents and the commission finally approved the rail rate of 32 cents on sugar shipped from Alabama, Florida and Louisiana to points in Indiana, Kentucky, Missouri, Illinois, Ohio, Tennessee and Wisconsin. The petition stated that the sugar traffic constitutes 33 1/3 per cent of the freight traffic of the Mississippi Valley Barge Line and 40 per cent of its revenue.

Wabash Returns to 44½-Hr. Week

After a four-months trial period, the five-day, 40-hr. week for general office clerks of the Wabash has been dropped and on August 1, they returned to a six-day, 44½-hr. week, the move resulting in the elimination of 45 union clerks in St. Louis, Mo., and 5 at Detroit, Mich. Prior to April 1, the clerks were paid on a basis of 48 hr. per week, although they worked only 44½ hr., while since April 1, they were paid for 43½ hr. and worked 40 hr. The union requested a return to the old schedule of hours and pay but without dismissing any clerks, and the Wabash replied that it could not do this and posted notices that certain clerical positions would be abolished as of August 1. The road is willing to continue the 40-hr. week.

Northwest Board Pledges Aid to Government—Favors Bus and Truck Control

The Northwest Shippers' Advisory Board, at its forty-second formal meeting at Aberdeen, S. D., on July 25, adopted two resolutions, the first tendering the full and complete co-operation of the board to President Franklin D. Roosevelt and Railroad Co-ordinator Joseph B. Eastman in their efforts to restore normal conditions and the second, referring to interstate bus and truck transportation. In the latter resolution, the board requests that the federal government place all highway trucks and motor coaches engaged in interstate transportation under the jurisdiction of the Interstate Commerce Commission and provide for their regulation along the same lines and to the same extent in principle, at least, that the railways are regulated, namely, the fixing of rates, the prohibiting of rebates, secret rates and discriminatory practices, the establishing of standards of service, providing for public safety, fixing of working conditions and wages of employees on a basis comparable for corresponding services with the scale of wages which Joseph B. Eastman, as federal railway co-ordinator, recently induced the railway managements and employees to agree upon; and remove or make more flexible the regulation of the railways with respect to matters where it is found impracticable or illegal to regulate competitive forms of transportation in a corresponding degree.

D. L. & W. Resignaling

Adhering to its announced policy of furnishing maximum employment during the depression, the Lackawanna has a large force at work renewing its signal system upon the main line of the Buffalo division, between Buffalo, N. Y., and Elmira. Besides providing work for regular forces, furloughed employes have been re-employed to augment the work. Virtually all of the apparatus being installed was reconditioned at the company's signal shop, at Dover, N. J. The work involves renewal of automatic block signals, substitution of electric for oil illumination and the lengthening of the blocks. Reducing the number of signals is in conformity with measures for utmost safety of train operation at all times. A feature of the improvement is that automatic electric lights are taking the place of oil lights.

North Western Passenger Traffic Up

July passenger traffic on the Chicago & North Western increased 31.2 per cent over July, 1932, as a result of increased travel stimulated by The Century of Progress Exposition in Chicago. The increase in July over the same month last year amounted to 37,936 passengers, and required the operation of 130 extra trains.

New York Central Traffic to Chicago at Peak

Travel over the New York Central to A Century of Progress Exposition at Chicago set a new peak on August 6, when 7,721 persons were brought into that city on the one day. A special train from Pittsburgh, Pa., and 8 regular trains with 27 sections, including 15 sections from New York and Boston, Mass., and 7 from the Southeast over the Big Four through Cincinnati, Ohio, were a part of the movement.

Oil Painting Given Millionth Guest at Rail Exhibit

The millionth World's Fair sightseer to visit the London, Midland & Scottish and the Chicago, Burlington & Quincy displays south of the Travel and Transport building at a Century of Progress at Chicago on August 3, Miss Caroline Pierce of Milton, Mass., was presented with an oil painting of the trains exhibited by these railroads. The presentation was made by Ralph Budd, president of the Burlington, and T. D. Slattery, assistant to the vice-president of the London, Midland & Scottish.

Abandonment of Two Colorado Roads Being Considered

The abandonment of two Colorado railroads that played an important part in gold and silver developments in Colorado is again under consideration. One line is the Colorado & Southern's South Park line that connects Denver with the mining camp of Leadville and the other is the Denver and Silver Plume line which embraces the once famous Georgetown loop. The Chicago, Burlington & Quincy, the parent company of these lines, plans to renew its application before the Interstate Commerce Commission to abandon the Leadville line. The application was filed three years ago but action was delayed to determine if the road could regain business lost to motor coaches and trucks.

The fate of the Silver Plume branch rests with the residents along the line. A meeting with shippers will be held soon and if they agree to give more business to the railroad instead of to trucks and motor coaches, a portion of the line recently damaged by floods will be rebuilt and service resumed. Otherwise, a request for abandonment will be filed.

Shippers Voting on Type of Cars Required

The Allegheny Regional Advisory Board has sent a questionnaire to producers, consumers, etc., which affords shippers the opportunity to place before the railroads their particular car equipment problems. The questionnaire is designed to reveal the actual need for such cars as the movable roof box car, the hopper or drop bottom box car with side doors, covered hopper cars, covered gondola cars and containers. The questions asked are:

Have you need for a car of this description? To what extent are you now using this type of car? If not, can you use them? and For what kind of materials?

Burlington Indicted

The Chicago, Burlington & Quincy and six Chicago commission merchants and firms were indicted on August 7 by a federal grand jury at Chicago on charges of violating the Elkins Act by unlawfully receiving, soliciting and granting rebates, it being alleged that the merchants procured approximately $50,000 by filing false claims and receiving settlements. The return of the indictments is the result of an investigation initiated several months ago by the Interstate Commerce Commission. According to a statement made by Assistant United States Attorney Benjamin F. Landis, "as soon as additional evidence of the practice of filing false claims with railroads and receiving rebates in the guise of false damage claims is disclosed, these matters will be presented for the consideration of the grand jury."

Acquisition of Cotton Belt by Southern Pacific Is Upheld by Special Tribunal

The petition of the Missouri Pacific and the Texas & Pacific against the United States and the Southern Pacific, attacking the validity of an order of the Interstate Commerce Commission authorizing the acquisition of the St. Louis Southwestern by the Southern Pacific, was denied by a special federal tribunal composed of Judge Charles H. Moorman of the United States circuit court and District Judges A. M. J. Cochran and Charles I. Dawson of Louisville, Ky., sitting at Frankfort, Ky. The court ruled that the two orders authorizing the acquisition and control of the Cotton Belt by the Southern Pacific are valid and that a third order of the commission taking the Cotton Belt from System No. 10, the Illinois Central, and placing it in System No. 16, the Southern Pacific, is valid.

New Rates to the Fair

The cent-a-mile coach rates which western railroads have sold during the past few months on Saturdays and Sundays to patrons wishing to visit the Century of Progress Exposition at Chicago are now being sold on Fridays, Saturdays and Sundays up to October 29.

The Great Northern, the Northern Pacific and the Chicago, Milwaukee, St. Paul & Pacific have announced a cent-a-mile fare to Chicago and return in effect from August 10 to September 20, which will be honored not only in day coaches but also in tourist sleepers. The usual sleeping car charge is additional. The rates apply from all stations in Montana as far west as Missoula on the Milwaukee and the Northern Pacific, and Stryker on the Great Northern. Passengers have 25 days in which to return. Railroads connecting with the Great Northern and the Northern Pacific and operating into Chicago are participating in the low fare.

St. Louis Committee of N.R.A.

The St. Louis (Mo.) committee organized to co-operate with the National Recovery Administration in acquainting employers, employees and the general public with the purposes of the N.R.A. and in securing their voluntary co-operation includes the following: Chairman, Col. Harry Scullin, president of the Scullin Steel Company; honorary chairman, Mayor Bernard F. Dickmann; vice-presidents, Edwin S. Feissner, president of the St. Louis Car Company, Henry W. Kiel, federal receiver for the St. Louis Public Service Company, and E. J. Miller, president of the St. Louis Screw & Bolt Company; and chairman of the Publicity committee, E. H. McReynolds, director of publicity and advertising of the Missouri Pacific.

Boston & Maine—Maine Central Subsidiary Resumes Airplane Service

Airplane passenger service between Boston, Mass., Portland, Me., Rockland, Waterville and Bangor was resumed by the Boston-Maine Airways, Inc., the aviation subsidiary of the Boston & Maine and the Maine Central, on August 11, with five round-trips daily between Boston and Portland, and two round-trips between Boston and Bangor. The new service is planned as a permanent all-year operation, provided the traffic warrants. The inaugural schedules will be maintained until October 1, when the fall and winter schedules will be announced. The Boston-Maine Airways, Inc., the first passenger air service wholly sponsored by railroads in this country, operated over this route as a summer-time operation in 1931, but service was suspended last year because of business conditions.

Further Appointments

(*Continued from page 253*)

C. W. Brown, Asst. Dir. Section of Purchases	5,400
G. A. Cooper, Assistant, Section of Purchases	4,200
F. W. Powell, Research Staff	8,500
O. S. Beyer, Research Staff	8,000
L. Craven, Research Staff	8,000
W. B. Poland, Research Staff	8,000
H. D. Folsom, Research Staff	5,500
F. R. Bell, Research Staff	5,400
W. L. Fulton, Research Staff	5,100

P. A. Conway, Research Staff..... 4,800
R. E. Freer, Research Staff..... 4,800

"As a matter of interest, many salaries of $25,000 and more were paid by the United States Railroad Administration, when it operated the railroads during the World War, the maximum being $50,000."

Brief biographical sketches of the newly appointed assistants follow:

Mr. Ballantine is one of the outstanding students of the subject of car pooling. He was born at Booneville, Mo., in 1872 and began his railroad career as a telegraph operator on the Kansas City, Fort Scott & Memphis. He was superintendent of transportation of the Kansas City Southern and assistant to the operating vice-president of the Rock Island. He served the A.E.F. in France as general superintendent of transportation and was assistant manager of the Car Service Division of the Railroad Administration in Washington for a year. He then became superintendent of transportation of the Union Pacific, following which he was assistant to the president of the Seaboard Air Line. In recent years he has been a transportation consultant.

Walter Bockstahler has had long experience in the freight consolidating and forwarding business. Born in Evansville, Ind., in 1889, he entered the service of the Wabash in 1908. He has served as vice-president of the U. S. Freight Company and as president of Atlas Freight, Inc.

Mr. Johnson was born at Clyde, Kansas, in 1893 and has been a teacher of journalism at several universities. He has studied railroad sales and advertising methods intensively for the past few years.

Mr. White was born at Manhattan, Kansas, in 1895. He was in the service of the Western Union Telegraph Company for a period and subsequently has been in the president's office of the Southern Pacific, serving consecutively as clerk, statistician, and executive assistant.

Mr. King was born at Junction City, Kansas, in 1901 and has carried on research in transportation economics and freight terminal operation at Kansas State Agricultural College and Cornell University. Mr. Brown, a graduate of Massachusetts Institute of Technology, is secretary and treasurer of the Brown Hoisting Machinery Company of Cleveland, Ohio.

Mr. Cooper, who was born at Mt. Pleasant, Pa., in 1901, has been the assistant chief business specialist in the Division of Simplified Practice, in the U. S. Bureau of Standards. Mr. Dalzell, born in Philadelphia in 1903, was assistant business specialist in the Division of Simplified Practice, Bureau of Standards.

Mr. Morgan, who was born at Niles, Mich., in 1891, and who holds a Ph.D. in economics from Yale University, is senior and principal economist of the Interstate Commerce Commission. Mr. Haley has specialized on railway finances in the service of the Interstate Commerce Commission since 1910. He was born in New York in 1885.

Mr. Conway, who was born in New York in 1882, has been an examiner in the Interstate Commerce Commission's Bureau of Valuation since 1925. Mr. Folsom likewise comes from the Bureau of Valuation, where he held the position of assistant chief valuation examiner. He was born in Salt Lake City in 1876 and has been a member of the bar since 1901.

Mr. Freer, also from the Bureau of Valuation, was formerly professor of law at St. Xavier College, Cincinnati. He was born in that city in 1896. Mr. Fulton was born at Oxford, Miss., in 1883 and prior to entering the Bureau of Valuation of the Interstate Commerce Commission in 1914, was assistant professor of engineering at the University of Vermont. Mr. Paxton has done three years of research work in transportation problems prior to which he had 12 years of experience in governmental research at the University of Texas and in Philadelphia. He was born in New Jersey in 1892.

Mr. Tufts was formerly in charge of statistical work for the National Association of Motor Bus Operators, subsequent to which he has been with the Brookings Institution. He was for two years in the employ of the Scarr Transportation Service, New York, operators of commercial motor vehicles. He was born in Chicago in 1898.

Mr. Urdahl has been an examiner for the Interstate Commerce Commission since 1921. Prior thereto he was professor of economics at several universities, including Wisconsin and Swarthmore.

Mr. Wilson is a member of the Washington, D. C., bar. Born at Vandalia, Ill., in 1878, he was engaged in railroad service from 1898 to 1908, following which he was an attorney examiner for the Commission. Mr. Bell was formerly in the engineering department of the New York Central. He entered the Bureau of Valuation of the Interstate Commerce Commission as an engineer and later became an attorney. He was born at Buffalo, N. Y., in 1888.

Equipment and Supplies

FREIGHT CARS

THE GULF, MOBILE & NORTHERN is dismantling 300 box, flat and gondola cars and 13 locomotives at Bogalusa, La.

E. I. DU PONT DE NEMOURS & COMPANY has ordered two narrow-gage tank cars from the General American Transportation Corporation.

THE HOOKER ELECTRO-CHEMICAL COMPANY, Niagara Falls, N. Y., has ordered two tank cars of 30 tons' capacity from the General American Transportation Corporation.

A. E. STALEY MANUFACTURING COMPANY, Decatur, Ill., has ordered 20 tank cars of 8,000 gal. capacity and 1 tank car of 6,100 gal. capacity from the General American Transportation Corporation.

IRON AND STEEL

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 2,000 tons of rail.

THE CHICAGO, BURLINGTON & QUINCY has ordered 3,500 tons of rails from the Colorado Fuel & Iron Company. The contract provides for an exchange of 90-lb. rails ordered last year for the 110-lb. rails constituting the new order.

MACHINERY AND TOOLS

THE DELAWARE, LACKAWANNA & WESTERN has ordered a Niles cotter and key seat miller.

V. V. Boattner
Western Regional Director

C. E. Weaver
Southern Regional Director

John R. Turney
Director, Transportation Service Section

John L. Rogers
Executive Assistant

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Maintenance of—Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
Akron, Canton & Youngstown	June	171	$153,870	$11	$161,443	$19,045	$17,482	$6,910	$38,803	$8,958	$91,198	56.5	$70,245	$59,041	$46,044	$41,237
	6 mos.	171	691,017	101	725,705	85,174	79,643	48,288	217,010	56,059	481,640	66.4	244,065	176,789	123,313	143,827
Alton	June	979	879,068	185,945	1,205,591	142,917	120,771	46,895	406,199	35,189	761,250	63.1	444,341	391,770	252,261	—30,269
	6 mos.	979	4,591,577	808,028	6,191,660	696,320	737,504	275,566	2,481,268	255,071	4,511,008	72.9	1,680,652	1,210,117	506,786	—14,853
Alton & Southern	June	31	.....	.....	91,614	9,145	7,506	5,481	27,013	3,542	52,687	57.51	38,927	31,255	27,354	24,803
	6 mos.	31	.....	.....	469,820	40,839	37,320	29,938	159,326	24,447	291,870	62.12	177,950	145,668	119,027	101,950
Atchison, Topeka & Santa Fe	June	9,734	7,392,459	1,266,611	9,417,789	1,230,107	1,860,445	306,307	2,859,832	363,543	6,610,195	70.2	2,807,594	1,709,563	1,816,430	761,523
	6 mos.	9,735	35,427,327	5,293,643	44,890,605	6,020,447	11,240,903	1,854,852	16,697,293	2,234,327	38,039,738	84.7	6,850,867	1,585,986	2,062,618	3,832,588
Gulf, Colorado & Santa Fe	June	1,955	1,012,832	48,923	1,130,802	128,428	236,172	48,613	367,320	64,552	844,936	74.7	285,866	199,717	113,325	—29,290
	6 mos.	1,955	5,202,946	221,689	5,830,602	1,066,455	1,451,404	295,403	2,254,536	385,723	5,452,907	93.5	377,695	—138,138	—723,683	—349,470
Panhandle & Santa Fe	June	1,878	601,249	26,361	672,721	78,585	138,068	17,230	216,207	30,698	480,788	71.5	191,933	148,185	81,903	—61,453
	6 mos.	1,878	3,354,390	125,060	3,752,488	614,512	849,855	106,004	1,212,174	187,994	2,969,982	79.1	782,506	519,450	72,806	—481,430
Atlanta & West Point	June	93	82,275	13,062	111,750	20,998	21,415	6,573	44,988	6,266	102,223	91.5	9,527	3,721	—9,253	—30,434
	6 mos.	93	425,883	82,449	601,072	109,610	136,367	40,729	277,745	39,722	615,630	102.4	—14,558	—61,675	—133,701	—157,344
Western of Alabama	June	133	83,570	15,601	111,168	20,872	26,960	6,732	41,053	6,696	103,859	93.4	7,309	—114	2,596	—23,198
	6 mos.	133	465,052	89,758	621,103	118,290	171,831	41,209	242,752	40,865	624,295	100.5	—3,192	—47,740	—24,050	—107,841
Atlanta, Birmingham & Coast	June	639	187,434	3,575	219,821	39,208	42,035	20,218	90,469	17,303	219,515	99.9	306	—14,165	—21,262	—98,528
	6 mos.	639	1,068,027	19,809	1,257,152	226,621	240,766	117,172	532,576	90,422	1,271,504	101.1	—14,352	—97,233	—168,183	—460,425
Atlantic Coast Line	June	5,144	2,664,026	213,332	3,213,737	359,478	633,332	104,080	1,108,138	138,447	2,356,242	73.3	857,495	506,916	377,332	—471,745
	6 mos.	5,144	16,983,183	2,692,326	21,908,699	2,439,070	3,608,433	666,461	7,163,828	780,339	14,815,906	67.6	7,092,793	4,338,600	3,364,657	866,616
Charleston & Western Carolina	June	342	151,602	650	156,951	23,495	18,887	5,063	50,127	5,158	102,730	65.5	54,221	37,159	36,850	3,042
	6 mos.	342	930,370	5,586	960,765	127,967	123,445	33,791	306,032	28,127	619,362	64.5	341,403	241,201	229,266	80,566
Baltimore & Ohio	June	6,403	9,916,290	950,967	11,616,249	848,703	1,737,663	326,440	3,503,961	543,843	7,054,068	60.7	4,562,181	3,895,503	3,495,529	2,132,394
	6 mos.	6,402	48,617,860	4,094,357	56,654,087	4,270,914	9,447,380	1,950,635	20,186,259	3,182,587	39,527,306	69.8	17,126,781	12,970,229	11,038,965	9,042,172
Baltimore & Ohio Chicago Term.	June	84	.....	.....	269,820	17,461	35,270	1,336	125,743	11,539	195,626	72.5	74,194	22,799	105,158	78,805
	6 mos.	84	.....	.....	1,465,807	102,545	230,126	8,854	792,656	78,099	1,240,630	84.6	225,177	29,828	544,940	488,042
Staten Island Rapid Transit	June	23	47,265	90,603	146,014	3,360	12,534	1,499	74,695	12,190	104,278	71.4	41,736	28,186	19,024	5,737
	6 mos.	23	302,328	490,347	833,317	41,726	70,494	9,968	451,885	70,957	645,030	77.4	188,287	100,372	5,756	—8,426
Bangor & Aroostook	June	609	277,392	11,868	308,402	92,153	81,417	4,438	79,535	22,398	280,797	91.1	27,605	2,604	21,644	53,993
	6 mos.	617	3,275,045	114,309	3,512,061	484,227	502,604	26,074	688,101	140,434	1,845,410	52.5	1,666,651	1,335,395	1,281,959	1,465,931
Belt Railway Co. of Chicago	June	54	.....	.....	354,030	23,324	30,435	2,258	138,632	8,537	203,186	57.4	150,844	108,761	153,143	86,166
	6 mos.	54	.....	.....	1,815,793	108,917	175,491	15,035	831,385	57,037	1,187,865	65.4	627,928	374,565	799,678	474,591
Bessemer & Lake Erie	June	225	720,492	430	729,515	57,069	123,964	9,270	111,790	35,046	337,081	46.2	392,434	327,520	329,726	—34,791
	6 mos.	225	2,043,053	4,636	2,092,582	201,459	908,795	59,722	549,531	191,717	1,911,092	91.3	181,490	38,223	108,798	—716,963
Boston & Maine	June	2,081	2,644,845	584,566	3,788,955	484,826	437,404	57,632	1,283,390	166,357	2,435,660	64.3	1,353,295	1,122,219	963,729	596,901
	6 mos.	2,081	13,523,963	3,168,363	19,755,522	2,388,821	2,948,657	357,783	7,794,282	1,014,559	14,545,083	73.6	5,210,439	3,880,778	3,094,016	3,620,341
Brooklyn Eastern Dist. Terminal	June	11	89,479	.....	91,378	4,407	10,728	390	23,714	6,097	45,336	49.6	46,042	39,968	39,968	19,991
	6 mos.	11	434,731	.....	441,106	28,491	45,890	1,545	132,198	38,549	246,673	55.9	194,433	157,063	157,063	140,550
Burlington-Rock Island	June	280	71,546	789	76,761	13,464	8,328	2,865	31,564	6,873	63,094	82.2	13,667	8,752	475	—21,012
	6 mos.	280	377,971	3,842	403,945	61,549	55,690	18,497	211,251	42,976	389,963	96.5	13,982	—16,100	—75,775	—101,922
Cambria & Indiana	June	37	96,248	.....	96,446	10,225	38,556	384	14,925	9,451	73,541	76.25	22,905	13,384	67,014	41,551
	6 mos.	37	594,818	.....	596,018	44,544	242,412	2,286	71,678	46,891	407,811	68.42	188,207	108,790	442,442	393,206
Canadian Pacific Lines in Maine	June	233	64,714	17,698	92,406	34,098	19,919	4,326	40,070	3,368	101,781	110.1	—9,375	—15,384	—45,524	—71,448
	6 mos.	233	784,094	85,849	932,067	146,560	174,768	25,381	371,167	22,303	740,179	79.4	191,888	145,877	9,591	—77,829
Canadian Pacific Lines in Vermont	June	85	71,814	10,749	98,909	23,161	16,116	1,922	44,930	2,304	88,433	89.4	10,476	4,976	—11,029	—10,340
	6 mos.	85	270,411	58,576	415,285	87,377	102,889	11,475	295,066	15,224	512,031	123.2	—96,746	—129,749	—231,146	—233,381
Central of Georgia	June	1,944	933,034	95,052	1,141,379	140,457	231,027	48,001	411,904	68,457	902,783	79.1	238,596	168,324	135,627	—145,843
	6 mos.	1,944	4,670,396	492,437	5,834,586	732,982	1,222,719	289,423	2,374,603	407,159	5,052,586	86.6	782,000	254,373	95,010	—111,363
Central New Jersey	June	691	1,795,527	360,830	2,306,648	163,277	431,426	45,538	929,882	93,480	1,675,677	72.6	630,971	270,296	186,499	—41,966
	6 mos.	691	10,028,252	2,020,561	12,930,100	922,344	2,430,294	244,782	5,306,983	562,432	9,539,941	73.8	3,390,159	1,802,969	1,346,511	1,528,288
Central Vermont	June	457	379,932	32,671	461,573	115,632	67,356	14,972	178,671	19,538	396,027	85.80	65,546	49,962	40,146	19,778
	6 mos.	457	1,857,479	196,456	2,313,195	444,047	495,912	83,495	1,061,652	120,268	2,205,585	95.35	107,610	13,848	—8,771	37,130
Chesapeake & Ohio	June	3,153	8,706,198	238,789	9,298,024	1,091,066	1,786,126	193,946	1,916,570	280,989	5,277,543	56.7	4,020,481	3,279,614	3,206,598	1,772,260
	6 mos.	3,147	44,805,779	1,157,154	47,701,619	5,407,135	8,779,678	949,890	10,989,690	1,678,245	27,871,410	58.4	19,830,209	15,295,002	14,730,881	13,302,105
Chicago & Eastern Illinois	June	938	760,021	122,841	991,330	131,053	111,664	46,875	396,336	54,671	743,912	75.0	247,418	171,942	53,770	—180,236
	6 mos.	938	4,486,723	472,691	5,521,991	719,145	804,300	302,748	2,475,743	325,918	4,660,469	84.4	861,522	359,197	—358,697	—913,101

Continued on next left-hand page

P. A. Conway, Research Staff..... 4,800
R. E. Freer, Research Staff..... 4,800

"As a matter of interest, many salaries of $25,000 and more were paid by the United States Railroad Administration, when it operated the railroads during the World War, the maximum being $50,000."

Brief biographical sketches of the newly appointed assistants follow:

Mr. Ballantine is one of the outstanding students of the subject of car pooling. He was born at Booneville, Mo., in 1872 and began his railroad career as a telegraph operator on the Kansas City, Fort Scott & Memphis. He was superintendent of transportation of the Kansas City Southern and assistant to the operating vice-president of the Rock Island. He served the A.E.F. in France as general superintendent of transportation and was assistant manager of the Car Service Division of the Railroad Administration in Washington for a year. He then became superintendent of transportation of the Union Pacific, following which he was assistant to the president of the Seaboard Air Line. In recent years he has been a transportation consultant.

Walter Bockstahler has had long experience in the freight consolidating and forwarding business. Born in Evansville, Ind., in 1889, he entered the service of the Wabash in 1908. He has served as vice-president of the U. S. Freight Company and as president of Atlas Freight, Inc.

Mr. Johnson was born at Clyde, Kansas, in 1893 and has been a teacher of journalism at several universities. He has studied railroad sales and advertising methods intensively for the past few years.

Mr. White was born at Manhattan, Kansas, in 1895. He was in the service of the Western Union Telegraph Company for a period and subsequently has been in the president's office of the Southern Pacific, serving consecutively as clerk, statistician, and executive assistant.

Mr. King was born at Junction City, Kansas, in 1901 and has carried on research in transportation economics and freight terminal operation at Kansas State Agricultural College and Cornell University. Mr. Brown, a graduate of Massachusetts Institute of Technology, is secretary and treasurer of the Brown Hoisting Machinery Company of Cleveland, Ohio.

Mr. Cooper, who was born at Mt. Pleasant, Pa., in 1901, has been the assistant chief business specialist in the Division of Simplified Practice, in the U. S. Bureau of Standards. Mr. Dalzell, born in Philadelphia in 1903, was assistant business specialist in the Division of Simplified Practice, Bureau of Standards.

Mr. Morgan, who was born at Niles, Mich., in 1891, and who holds a Ph.D. in economics from Yale University, is senior and principal economist of the Interstate Commerce Commission. Mr. Haley has specialized on railway finances in the service of the Interstate Commerce Commission since 1910. He was born in New York in 1885.

Mr. Conway, who was born in New York in 1882, has been an examiner in the Interstate Commerce Commission's Bureau of Valuation since 1925. Mr. Folsom likewise comes from the Bureau of Valuation, where he held the position of assistant chief valuation examiner. He was born in Salt Lake City in 1876 and has been a member of the bar since 1901.

Mr. Freer, also from the Bureau of Valuation, was formerly professor of law at St. Xavier College, Cincinnati. He was born in that city in 1896. Mr. Fulton was born at Oxford, Miss., in 1883 and prior to entering the Bureau of Valuation of the Interstate Commerce Commission in 1914, was assistant professor of engineering at the University of Vermont. Mr. Paxton has done three years of research work in transportation problems prior to which he had 12 years of experience in governmental research at the University of Texas and in Philadelphia. He was born in New Jersey in 1892.

Mr. Tufts was formerly in charge of statistical work for the National Association of Motor Bus Operators, subsequent to which he has been with the Brookings Institution. He was for two years in the employ of the Scarr Transportation Service, New York, operators of commercial motor vehicles. He was born in Chicago in 1898.

Mr. Urdahl has been an examiner for the Interstate Commerce Commission since 1921. Prior thereto he was professor of economics at several universities, including Wisconsin and Swarthmore.

Mr. Wilson is a member of the Washington, D. C., bar. Born at Vandalia, Ill., in 1878, he was engaged in railroad service from 1898 to 1908, following which he was an attorney examiner for the Commission. Mr. Bell was formerly in the engineering department of the New York Central. He entered the Bureau of Valuation of the Interstate Commerce Commission as an engineer and later became an attorney. He was born at Buffalo, N. Y., in 1888.

Equipment and Supplies

FREIGHT CARS

THE GULF, MOBILE & NORTHERN is dismantling 300 box, flat and gondola cars and 13 locomotives at Bogalusa, La.

E. I. DU PONT DE NEMOURS & COMPANY has ordered two narrow-gage tank cars from the General American Transportation Corporation.

THE HOOKER ELECTRO-CHEMICAL COMPANY, Niagara Falls, N. Y., has ordered two tank cars of 30 tons' capacity from the General American Transportation Corporation.

A. E. STALEY MANUFACTURING COMPANY, Decatur, Ill., has ordered 20 tank cars of 8,000 gal. capacity and 1 tank car of 6,100 gal. capacity from the General American Transportation Corporation.

IRON AND STEEL

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 2,000 tons of rail.

THE CHICAGO, BURLINGTON & QUINCY has ordered 3,500 tons of rails from the Colorado Fuel & Iron Company. The contract provides for an exchange of 90-lb. rails ordered last year for the 110-lb. rails constituting the new order.

MACHINERY AND TOOLS

THE DELAWARE, LACKAWANNA & WESTERN has ordered a Niles cotter and key seat miller.

V. V. Boattner
Western Regional Director

C. E. Weaver
Southern Regional Director

John R. Turney
Director, Transportation Service Section

John L. Rogers
Executive Assistant

MISCELLANEOUS

THE TEXAS & PACIFIC has completed the installation of air-conditioning equipment ordered from the Safety Car Heating & Lighting Company on four dining cars.

THE CHESAPEAKE & OHIO has placed an order with the Timken Roller Bearing Company for roller bearings, for use under six of its existing high speed passenger locomotives.

THE GOULD STORAGE BATTERY CORPORATION, Depew, N. Y., will furnish the three battery equipments for use on the Diesel oil locomotives recently bought by the Delaware, Lackawanna & Western from the Ingersoll-Rand Company.

PRESIDENT FREDERICK E. WILLIAMSON has announced that the New York Central Lines have added 19,341 employees, or 20.9 per cent, to their payrolls since June 1. The additional men were distributed as follows: Maintenance of way forces, 8,800, maintenance of equipment, 6,616, other departments, 3,925. While the upturn in traffic in itself justifies the increases in forces, President Williamson said, at the same time, an earnest effort motivated by a desire to carry out President Roosevelt's recovery policy was made to employ as many men as the railroad system's finances permitted. Practically all the additional employees were recruited from men who had been furloughed because of the drop in traffic during the depression.

J. M. DAVIS, president of the Delaware, Lackawanna & Western, announced that effective August 1 the supervisory and clerical forces of the Lackawanna had resumed full-time employment. This affected 2,000 employees who have taken two days of compulsory holiday each month; the new arrangement will be equivalent to about 6 per cent increase in their present pay. The shop forces of the Lackawanna, who have been employed steadily three days a week all during the depression, will be put upon a five-day week effective September 1. This will affect 4,000 employees, whose earnings will be increased materially by the new order. The maintenance of way forces of the company also will be put upon a five-day week beginning September 1. Three thousand employees will be affected in that department. The track forces have been working a minimum of three days, in some months five days a week. During recent months, in order to provide work five days a week for as many as possible in that branch of service, the Lackawanna has laid 8,000 tons of new rail; to continue that policy the company is in the market for some 2,000 tons of additional rail.

Engine Frame for Union Pacific's High Speed Train

Lukenweld, Inc., division of Lukens Steel Company, Coatesville, Pa., has been awarded the contract by Winton Engine Corporation, Cleveland, Ohio, for the manufacture, in arc welded rolled steel construction, of the complete engine structure for the 600 hp. Winton engine which will power the new 110-mile an hour lightweight passenger train of the Union Pacific which was reported in the *Railway Age* of May 27.

Shop Employment on Seaboard Air Line

The Seaboard Air Line had a working agreement with its shop craftsmen by which it agreed that the men employed would be given six days' employment a week. In order to avoid a drastic layoff of men in 1930, by mutual agreement between the railroad and the shop crafts, the men were put on a five-day a week basis. Due to further falling off in revenues in 1931, it was agreed for certain months to work four days a week rather than close the shops, which arrangement existed up to July of this year. Since 1927 actual closing of the main shops of the railroad at Portsmouth, Va., and Jacksonville, Fla., had not taken place until July 15. An agreement was then reached whereby the shops were reopened on August 1 with the same number of employees on a part-time basis, which is satisfactory both to the representatives of the shopmen and the railroad. This will restore to service 1,143 employees that were laid off principally at Portsmouth and Jacksonville.

Roads Respond to Eastman's Plea to Increase Expenditures

Following the plea of Joseph B. Eastman, federal co-ordinator of transportation, to the railroads to increase their maintenance expenditures, several railroads have announced programs of this character. Among these, additional expenditures for maintenance have been authorized by the Missouri Pacific which provide $1,650,000 for maintenance of equipment and $1,450,000 for maintenance of way and structures. The August program, involving $3,100,000, provides for the expenditure of $440,000 more for this purpose than was spent in August of last year and an increase of $150,000 over the amount spent in July of this year, when the expenditure for maintenance was $300,000 greater than in July, 1932. The August program also involves an increase of $50,000 for maintenance of way work over July and $150,000 over August, 1932, while the maintenance of equipment program for the current month involves an increase of $100,000 over July of this year and $290,000 over August of last year.

Supply Trade

A. F. McCormick, formerly representative of the **Clark Equipment Company,** Battle Creek, Mich., has been appointed sales manager of the **Bitucote Products Company,** St. Louis, Mo.

Dwight R. G. Palmer was elected president of the **General Cable Corporation,** New York, succeeding **H. T. Dyett,** whose resignation was accepted with great regret, and **Dr. Frank M. Potter** was elected vice-president, at a meeting of the board of directors on August 3.

H. W. Kidwell, 2431 E street, Northwest, Washington, D. C., has been appointed special sales agent of the **Columbia Machine Works and Malleable Iron Company,** Brooklyn, N. Y. His territory will cover Baltimore, Richmond, Norfolk and Washington.

Nathaniel S. Reader on August 1 was appointed general manager for the receivers of the **Pressed Steel Car Company** in full charge of plant operations. Mr. Reeder will have his headquarters at McKees Rocks, Pa. In addition to these

Nathaniel S. Reeder

duties, he will continue as president of the American Steel Corporation of Cuba. Mr. Reeder was graduated from Cornell University in 1896. He joined the Pressed Steel Car Company in 1902, and has served in many different capacities since that time. From 1905 to 1910 he was in charge of a subsidiary, the Canada Car Company, Ltd., which was later merged with the Canadian Car & Foundry Company, Montreal, P. Q. He was elected vice-president of the Pressed Steel Car Company in 1910, and a director in 1915.

William Craig Wolfe has been appointed vice-president in charge of sales of the **Reading Iron Company,** Philadelphia, Pa. Mr. Wolfe has a long experience in the marketing of iron products. During 1907 and 1908, he was with the Commercial Steel & Iron Company, Chicago, a brokerage company representing several mills. In the latter year he joined the Seneca Iron & Steel Company, Buffalo,

William Craig Wolfe

N. Y., as a salesman, remaining with that company until 1919. He then was appointed assistant to the president of the

Standard Steel Tube Company, Toledo, Ohio, and two years later became manager of sales for the Highland Iron & Steel Company. In 1928, he was appointed general manager remaining in that position until his recent appointment with the Reading Iron Company. Mr. Wolfe took a leading part in the organization of the Wrought Iron Manufacturers' Association.

The Yale & Towne Manufacturing Company, with executive offices in the Chrysler building, New York, has purchased the real estate, machinery, tools, inventory, patents and goodwill of the **Walker Vehicle Company** and the **Automatic Transportation Company,** of Chicago, makers of industrial electric trucks and commercial electric street vehicles, which lines will supplement those already manufactured by the company. It will continue the manufacture and sale of the complete line of each company at 101 West Eighty-seventh street, Chicago, retaining the present personnel with **F. H. Tinsley** in direct charge.

OBITUARY

John Irving Romer, president of Printer's Ink Publishing Company and the Romer Publishing Company, New York, died at Watch Hill, R. I. on August 9, at the age of 63 years. Mr. Romer was one of the first professional writers of advertising in the United States. In 1908, he became editor of Printer's Ink and later bought a controlling interest in that publication. Mr. Romer is credited with being the instigator of "Truth in Advertising" movements, which are now being carried on by the Better Business Bureau.

Construction

NEW YORK CENTRAL.—The New York Public Service Commission has ordered that a rehearing be held on September 14, in the proceedings for the elimination of the Main street crossing of this road at Patterson, Putnam county, N. Y.

PENNSYLVANIA-NEW YORK, CHICAGO & ST. LOUIS.—The New York Public Service Commission has directed the elimination of the Big Tree road crossings of these two railroads, at Bayview, in the town of Hamburg, Erie county, N. Y. The crossings are to be eliminated by depressing the highway and elevating the railroad and placing the grade of the highway below the grade of the railroad. The estimated cost of the elimination will be about $141,000, exclusive of land and damages.

STOCKTON (CAL.) PORT TERMINAL ASSOCIATION.—As a part of the development of the new inland port of Stockton, Cal., new railroad lines are being constructed from connections with existing lines (in Stockton) of the Atchison, Topeka & Santa Fe, the Southern Pacific and the Western Pacific to a point on the east bank of the San Joaquin river. The foregoing railroads are also constructing jointly a new line to the same point on the east bank of the San Joaquin river to and on Rough and Ready Island, the proposed site of a new industrial area. The combined projects involve the construction of about six miles of railroad and of a drawbridge across the San Joaquin river, at a total estimated cost of $500,000. The Stockton Port Terminal Association has been organized by the city and the railroads to provide general terminal switching service, the new terminal tracks to be operated by the three trunk line railroads, in rotation, for one year each. Work is now under way on the 5,000-ft. industrial track, including the 235-ft. steel drawspan crossing the San Joaquin river to Rough and Ready Island, the cost of this work being $96,000. A contract for the bridge foundations has been placed with Lord & Bishop, while bids for the bridge superstructure and track will be received during August and September, respectively.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon that part of its line extending from Henrietta, Mo., to North Lexington, 3.1 miles.

CHARLESTON & WESTERN CAROLINA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $72,000 of first consolidated mortgage, series B, 50-year bonds in reimbursement for capital expenditures.

CINCINNATI-NASHVILLE SOUTHERN.—*Abandonment.*—This company and the Tennessee, Kentucky & Northern have applied to the Interstate Commerce Commission for authority to abandon the line between Algood, Tenn., and Livingston, 17 miles.

COLORADO & SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon, and the Denver & Rio Grande Western to abandon the operation of, a narrow-gage branch line extending from Parlin, Colo., to Quartz, 18.5 miles.

LOUISVILLE & NASHVILLE.—*Abandonment.*—Examiner H. C. Davis has recommended to the Interstate Commission that this company be permitted to abandon a branch line extending from Iron City, Tenn., to Pinkney, 11.7 miles.

MISSOURI PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized the St. Louis, Brownsville & Mexico to abandon a branch line extending from Buckeye, Tex., to Collegeport, 16.9 miles.

NEW ORLEANS GREAT NORTHERN.—*Acquisition and Securities.*—The Interstate Commerce Commission has authorized the New Orleans Great Northern Railway Company to acquire the properties formerly owned by the New Orleans Great Northern Railroad Company. The new company is authorized also to issue $5,367,000 of first mortgage, 50-year, 5 per cent bonds, series A, $4,124,000 of 5 per cent income debentures and $824,000 of common stock. The property was sold by a special master on June 29 for $989,760, the upset price, to representatives of the bondholders of the old company. The leasing of the property to the Gulf, Mobile & Northern for 99 years is approved at a rental sufficient to pay interest on the bonds and 5 per cent on the debentures (the payment on account of the debentures, however, not to exceed one-third of the dividends paid by the G., M. & N. to its own stockholders. Provision is also made for the operation by the N. O. G. N. of certain terminal facilities of the New Orleans & Northeastern in St. Tammany and Orleans parishes, La.

NEW YORK CENTRAL.—*Acquisition of Chicago, Attica & Southern.*—Examiner J. V. Walsh has issued a supplemental report recommending that the New York Central be not required for the time being to purchase the Chicago, Attica & Southern for $165,000, in fulfillment of the requirements of the permission accorded it to unify its lines, but that it should offer this price for the property, adjusted for any change in the Chicago value of scrap, at such time as the Central returns to a dividend basis; that, in the event that the Attica line is abandoned before that time, it make certain reductions in rates on grain from Attica points to Chicago.

SOUTHERN PACIFIC.—*Abandonment.*—This company has been authorized to abandon that part of its Newport branch extending from Dyer, Calif., to Huntington Beach, 11.6 miles—the line being no longer profitable because of truck competition.

Average Prices of Stocks and of Bonds

	Aug. 8	Last week	Last year
Average price of 20 representative railway stocks..	45.08	43.85	22.96
Average price of 20 representative railway bonds..	73.90	73.12	59.43

Railway Officers

OPERATING

C. E. Weaver, general manager and chief engineer of the Central of Georgia, Savannah, Ga., has been appointed southern regional director on the staff of Federal Co-ordinator of Transportation J. B. Eastman. **R. R. Cummins,** superintendent of maintenance of way, has been appointed acting general manager and chief engineer during Mr. Weaver's leave of absence.

F. E. Lewis, who has been appointed to the newly-created position of general manager of the Chicago, Indianapolis & Louisville, with headquarters at Indianapolis, Ind., was born in Clarence, N. Y., on December 2, 1875, and entered railway service as a water boy for a construction gang on the New York Central. Later he served as timekeeper, steam-shovel fireman and locomotive fireman. In 1893, he entered the employ of Colonel B. J. Gifford in Lake County, Ind., and in 1898, was appointed rodman and assistant engi-

neer on the Chicago & Wabash Valley then being constructed by the Gifford estate. With the completion of the road,

Warren Photo

F. E. Lewis

Mr. Lewis was made general manager. In 1914, when the Chicago, Indianapolis & Louisville acquired this railroad, he was appointed trainmaster and later superintendent. In 1920, he was promoted to general superintendent, which position he has held until his recent appointment.

TRAFFIC

Edward Campbell, general freight agent of the Bessemer & Lake Erie, has been appointed traffic manager, with headquarters at Pittsburgh, Pa., as before. **R. S. Wolford** has been appointed general freight agent succeeding Mr. Campbell.

J. H. Christy, general dairy agent of the Delaware, Lackawanna & Western, with headquarters at Chicago, has been promoted to assistant western traffic manager, with the same headquarters. He was born in Spencer, Ind., and attended Tri State College and Valparaiso University, entering railway service with the Union Ticket Office at Indianapolis, Ind. Later he was employed in the land department of the Canadian Pacific and the operating

J. H. Christy

department of the Cleveland, Cincinnati, Chicago & St. Louis. On March 1, 1914 he entered the service of the Lackawanna at Indianapolis and from 1918 to 1920, was connected with the United States Railroad Administration at that place. In the latter year he returned to the employ of the Lackawanna as commercial agent at St. Paul, Minn., which position he held until 1925, when he was appointed general dairy agent at Chicago, a position he held until his recent promotion.

ENGINEERING AND SIGNALING

J. L. Pickles, district engineer of the Canadian National, with headquarters at West Duluth, Minn., has been appointed superintendent of the Duluth, Winnepeg & Pacific, with headquarters at Virginia, Minn. **N. M. Waddell,** division engineer of the Brandon division of the Canadian National, has been appointed assistant division engineer of the consolidated Portage-Brandon division, with headquarters at Winnepeg, Man. **F. W. Leeper,** division engineer and roadmaster of the Saskatoon division, has been appointed division engineer, with headquarters at Saskatoon, Sask. **G. Murray,** division engineer of the Melville division, has been appointed assistant division engineer and roadmaster, with headquarters at Melville. **R. W. Ross,** division engineer, has been appointed division engineer of the consolidated Edmonton and Edson division, with headquarters at Edmonton, Alta., to succeed **A. J. Gayfer,** division engineer of the Edson division, who has been appointed assistant division engineer of the consolidated Edmonton and Edson division. **J. A. Crawford,** bridge and building master, with headquarters at Kamloops, B. C., has been appointed bridge and building master, with headquarters at Saskatoon, Sask., and has been succeeded by **C. F. O'Connor,** superintendent of construction at Edmonton, Alta., who in turn has been succeeded by **E. K. Hall** as supervising engineer, the position of superintendent of construction having been abolished.

MECHANICAL

H. J. McCracken, assistant master mechanic on the Southern Pacific, with headquarters at Sparks, Nev., has been promoted to master mechanic of the Sacramento division, with headquarters at Roseville, to succeed **L. S. Pratt,** retired.

W. W. Simpson, motor car supervisor on the west end of the Northern Pacific, with headquarters at Seattle, Wash., has been promoted to motor car supervisor of the entire system, with headquarters at St. Paul, Minn., and will take over some of the duties of **C. E. Allen,** assistant to the mechanical superintendent and motor car supervisor on the east end, who has retired.

PURCHASES AND STORES

J. L. Brown, acting purchasing agent of the Seaboard Air Line, has been appointed purchasing agent, succeeding **W. M. Portlock,** retired. Mr. Brown will have headquarters at Norfolk, Va. He was born at Coupar Angus, Perthshire, Scotland, on October 28, 1894, and received his education at the Coupar Angus public school and evening continuation classes. Mr. Brown entered railroad service in October, 1914, with the Seaboard Air Line as clerk in the auditor passenger accounts office at Wilmington, N. C., working in various positions until April, 1916, at which time he resigned to enter the Canadian Army, serving in France for about three years. He re-entered railway service with the Seaboard Air Line as clerk in the passenger bureau in May, 1919, becoming secretary to purchasing agent in June, 1919.

J. L. Brown

Mr. Brown was appointed chief clerk to purchasing agent in May, 1922, and assistant office manager in March, 1926. In March, 1928, he became assistant to purchasing agent and during the past few months served as acting purchasing agent.

OBITUARY

Henry H. Cartwright, real estate agent of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., died in Winchester, Ky., on July 25 of pneumonia.

Henry F. Sanborn, general eastern agent of the St. Louis-San Francisco, with headquarters at New York, who had been missing for several weeks, was found dead from bullet wounds at Bayside, Queens, New York City, on August 7, the surrounding circumstances indicating that he was murdered.

Frank A. Wadleigh, who retired as passenger traffic manager of the Denver & Rio Grande Western in 1928, died in Denver, Colo., on July 31. Following his retirement he became passenger agent for the Rocky Mountain Parks Transportation Company, which position he was holding at the time of his death.

Ralph H. Anthony, freight claim agent of the Pittsburgh & Lake Erie, died on July 26 at his home in Pittsburgh, Pa. Mr. Anthony was born on December 18, 1882, at Pittsburgh and commenced his railroad career in 1898 as a clerk in the accounting department of the Pittsburgh & Lake Erie. In 1913 he was promoted to traveling auditor for the road and resigned on May 31, 1918. He re-entered railway service with the P. & L. E. as auditor freight accou on January 1, 1922, and was freight claim agent in February, position he held until his death.

Tables of Revenues and Expenses o begin on next left

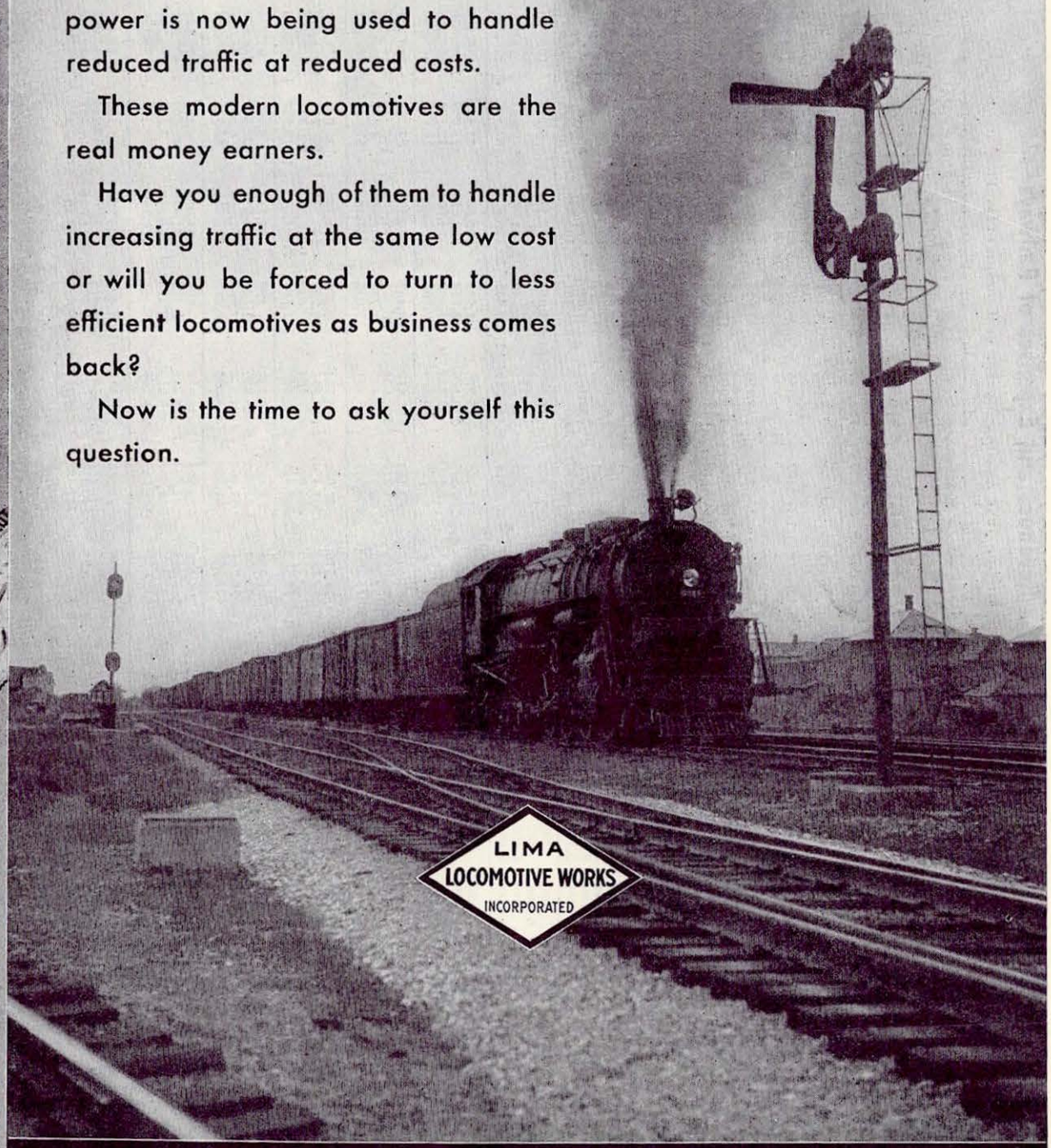
THESE Are The Money Makers

THE best of the railroads' motive power is now being used to handle reduced traffic at reduced costs.

These modern locomotives are the real money earners.

Have you enough of them to handle increasing traffic at the same low cost or will you be forced to turn to less efficient locomotives as business comes back?

Now is the time to ask yourself this question.



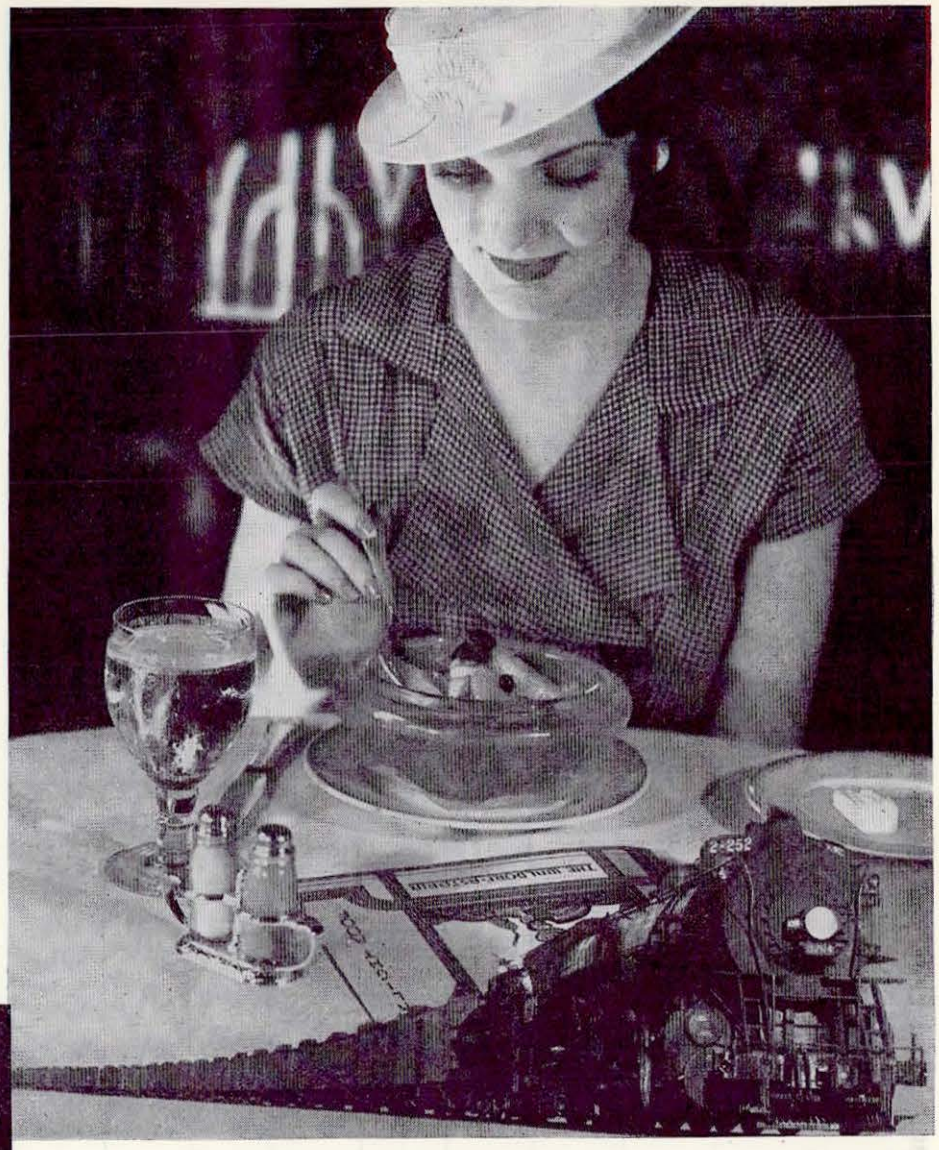
LIMA LOCOMOTIVE WORKS • Incorporated • LIMA, OHIO

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
Akron, Canton & Youngstown	June	171	$153,870	$11	$161,443	$19,045	$17,482	$6,910	$38,803	$8,958	$91,198	56.5	$70,245	$59,041	$46,044	$41,237
	6 mos.	171	691,017	101	725,705	85,174	79,643	48,288	217,010	56,059	481,640	66.4	244,065	176,789	123,313	143,827
Alton	June	979	879,068	185,945	1,205,591	142,917	120,771	46,895	406,199	35,189	761,250	63.1	444,341	391,770	252,261	—30,269
	6 mos.	979	4,591,577	808,028	6,191,660	696,320	737,504	275,566	2,481,268	255,071	4,511,008	72.9	1,680,652	1,210,117	506,786	—14,853
Alton & Southern	June	31	.....	.....	91,614	9,145	7,506	5,481	27,013	3,542	52,687	57.51	38,927	31,255	27,354	24,803
	6 mos.	31	.....	.....	469,820	40,839	37,320	29,938	159,326	24,447	291,870	62.12	177,950	145,668	119,027	101,950
Atchison, Topeka & Santa Fe	June	9,734	7,392,459	1,266,611	9,417,789	1,230,107	1,860,445	306,307	2,859,832	363,543	6,610,195	70.2	2,807,594	1,709,563	1,816,430	761,523
	6 mos.	9,735	35,427,327	5,293,643	44,890,605	6,020,447	11,240,903	1,854,852	16,697,293	2,234,327	38,039,738	84.7	6,850,867	1,585,986	2,062,618	3,832,588
Gulf, Colorado & Santa Fe	June	1,955	1,012,832	48,923	1,130,802	128,428	236,172	48,613	367,320	64,552	844,936	74.7	285,866	199,717	113,325	—29,290
	6 mos.	1,955	5,202,946	221,689	5,830,602	1,066,455	1,451,404	295,403	2,254,536	385,723	5,452,907	93.5	377,695	—138,138	—723,683	—349,470
Panhandle & Santa Fe	June	1,878	601,249	26,361	672,721	78,585	138,068	17,230	216,207	30,698	480,788	71.5	191,933	148,185	81,903	—61,453
	6 mos.	1,878	3,354,390	125,060	3,752,488	614,512	849,855	106,004	1,212,174	187,994	2,969,982	79.1	782,506	519,450	72,806	—481,430
Atlanta & West Point	June	93	82,275	13,062	111,750	20,998	21,415	6,573	44,988	6,266	102,223	91.5	9,527	3,721	—9,253	—30,434
	6 mos.	93	425,883	82,449	601,072	109,610	136,367	40,729	277,745	39,722	615,630	102.4	—14,558	—61,675	—133,701	—157,344
Western of Alabama	June	133	83,570	15,601	111,168	20,872	26,960	6,732	41,053	6,696	103,859	93.4	7,309	—114	2,596	—23,198
	6 mos.	133	465,052	89,758	621,103	118,290	171,831	41,209	242,752	40,865	624,295	100.5	—3,192	—47,740	—24,050	—107,841
Atlanta, Birmingham & Coast	June	639	187,434	3,575	219,821	39,208	42,035	20,218	90,469	17,303	219,515	99.9	306	—14,165	—21,262	—98,528
	6 mos.	639	1,068,027	19,809	1,257,152	226,621	240,766	117,172	532,576	90,422	1,271,504	101.1	—14,352	—97,233	—168,183	—460,425
Atlantic Coast Line	June	5,144	2,664,026	213,332	3,213,737	359,478	633,332	104,080	1,108,138	138,447	2,356,242	73.3	857,495	506,916	377,332	—471,745
	6 mos.	5,144	16,983,183	2,692,326	21,908,699	2,439,070	3,608,433	666,461	7,163,828	780,339	14,815,906	67.6	7,092,793	4,338,600	3,364,657	866,616
Charleston & Western Carolina	June	342	151,602	650	156,951	23,495	18,887	5,063	50,127	5,158	102,730	65.5	54,221	37,159	36,850	3,042
	6 mos.	342	930,370	5,586	960,765	127,967	123,445	33,791	306,032	28,127	619,362	64.5	341,403	241,201	229,266	80,566
Baltimore & Ohio	June	6,403	9,916,290	950,967	11,616,249	848,703	1,737,663	326,440	3,503,961	543,843	7,054,068	60.7	4,562,181	3,895,503	3,495,529	2,132,394
	6 mos.	6,402	48,617,860	4,094,357	56,654,087	4,270,914	9,447,380	1,950,635	20,186,259	3,182,587	39,527,306	69.8	17,126,781	12,970,229	11,038,965	9,042,172
Baltimore & Ohio Chicago Term	June	84	.....	.....	269,820	17,461	35,270	1,336	125,743	11,539	195,626	72.5	74,194	22,799	105,158	78,805
	6 mos.	84	.....	.....	1,465,807	102,545	230,126	8,854	792,656	78,099	1,240,630	84.6	225,177	29,828	544,940	488,042
Staten Island Rapid Transit	June	23	47,265	90,603	146,014	3,360	12,534	1,499	74,695	12,190	104,278	71.4	41,736	28,186	19,024	5,737
	6 mos.	23	302,328	490,347	833,317	41,726	70,494	9,968	451,885	70,957	645,030	77.4	188,287	100,372	5,756	—8,426
Bangor & Aroostook	June	609	277,392	11,868	308,402	92,153	81,417	4,438	79,535	22,398	280,797	91.1	27,605	2,604	21,644	53,993
	6 mos.	617	3,275,045	114,309	3,512,061	484,227	502,604	26,074	688,101	140,434	1,845,410	52.5	1,666,651	1,335,395	1,281,959	1,465,931
Belt Railway Co. of Chicago	June	54	.....	.....	354,030	23,324	30,435	2,258	138,632	8,537	203,186	57.4	150,844	108,761	153,143	86,166
	6 mos.	54	.....	.....	1,815,793	108,917	175,491	15,035	831,385	57,037	1,187,865	65.4	627,928	374,565	799,678	474,591
Bessemer & Lake Erie	June	225	720,492	430	729,515	57,069	123,964	9,270	111,790	35,046	337,081	46.2	392,434	327,520	329,726	—34,791
	6 mos.	225	2,043,053	4,636	2,092,582	201,459	908,795	59,722	549,531	191,717	1,911,092	91.3	181,490	38,223	108,798	—716,963
Boston & Maine	June	2,081	2,644,845	584,566	3,788,955	484,826	437,404	57,632	1,283,390	166,357	2,435,660	64.3	1,353,295	1,122,219	963,729	596,901
	6 mos.	2,081	13,523,963	3,168,363	19,755,522	2,388,821	2,948,657	357,783	7,794,282	1,014,559	14,545,083	73.6	5,210,439	3,880,778	3,094,016	3,620,341
Brooklyn Eastern Dist. Terminal	June	11	89,479	.....	91,378	4,407	10,728	390	23,714	6,097	45,336	49.6	46,042	39,968	39,968	19,991
	6 mos.	11	434,731	.....	441,106	28,491	45,890	1,545	132,198	38,549	246,673	55.9	194,433	157,063	157,063	140,550
Burlington-Rock Island	June	280	71,546	789	76,761	13,464	8,328	2,865	31,564	6,873	63,094	82.2	13,667	8,752	475	—21,012
	6 mos.	280	377,971	3,842	403,945	61,549	55,690	18,497	211,251	42,976	389,963	96.5	13,982	—16,100	—75,775	—101,922
Cambria & Indiana	June	37	96,248	.....	96,446	10,225	38,556	384	14,925	9,451	73,541	76.25	22,905	13,384	67,014	41,551
	6 mos.	37	594,818	.....	596,018	44,544	242,412	2,286	71,678	46,891	407,811	68.42	188,207	108,790	442,442	393,206
Canadian Pacific Lines in Maine	June	233	64,714	17,698	92,406	34,098	19,919	4,326	40,070	3,368	101,781	110.1	—9,375	—15,384	—45,524	—71,448
	6 mos.	233	784,094	85,849	932,067	146,560	174,768	25,381	371,167	22,303	740,179	79.4	191,888	145,877	9,591	—77,829
Canadian Pacific Lines in Vermont	June	85	71,814	10,749	98,909	23,161	16,116	1,922	44,930	2,304	88,433	89.4	10,476	4,976	—11,029	—10,340
	6 mos.	85	270,411	58,576	415,285	87,377	102,889	11,475	295,066	15,224	512,031	123.2	—96,746	—129,749	—231,146	—233,381
Central of Georgia	June	1,944	933,034	95,052	1,141,379	140,457	231,027	48,001	411,904	68,457	902,783	79.1	238,596	168,324	135,627	—145,843
	6 mos.	1,944	4,670,396	492,437	5,834,586	732,982	1,222,719	289,423	2,374,603	407,159	5,052,586	86.6	782,000	254,373	95,010	—111,363
Central New Jersey	June	691	1,795,527	360,830	2,306,648	163,277	431,426	45,538	929,882	93,480	1,675,677	72.6	630,971	270,296	186,499	—41,966
	6 mos.	691	10,028,252	2,020,561	12,930,100	922,344	2,430,294	244,782	5,306,983	562,432	9,539,941	73.8	3,390,159	1,802,969	1,346,511	1,528,288
Central Vermont	June	457	379,932	32,671	461,573	115,632	67,356	14,972	178,671	19,538	396,027	85.80	65,546	49,962	40,146	19,778
	6 mos.	457	1,857,479	196,456	2,313,195	444,047	495,912	83,495	1,061,652	120,268	2,205,585	95.35	107,610	13,848	—8,771	37,130
Chesapeake & Ohio	June	3,153	8,706,198	238,789	9,298,024	1,091,066	1,786,126	193,946	1,916,570	280,989	5,277,543	56.7	4,020,481	3,279,614	3,206,598	1,772,260
	6 mos.	3,147	44,805,779	1,157,154	47,701,619	5,407,135	8,779,678	949,890	10,989,690	1,678,245	27,871,410	58.4	19,830,209	15,295,002	14,730,881	13,302,105
Chicago & Eastern Illinois	June	938	760,021	122,841	991,330	131,053	111,664	46,875	396,336	54,671	743,912	75.0	247,418	171,942	53,770	—180,236
	6 mos.	938	4,486,723	472,691	5,521,991	719,145	804,300	302,748	2,475,743	325,918	4,660,469	84.4	861,522	359,197	—358,697	—913,101

Continued on next left-hand page

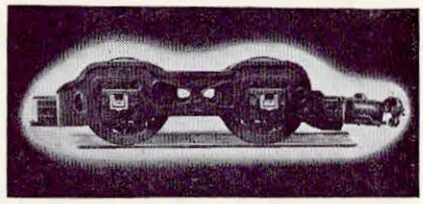


PERISHABLES
Are Kept Moving By
BOOSTER
LOCOMOTIVES

Fruit growers throughout the country depend upon transportation to deliver their products in good condition to widely separated markets. "Soft-fruits", in particular, present difficulties. They must not be damaged—train schedules must be kept to assure proper re-icing in transit.

The Locomotive Booster has helped develop this service to a high state of efficiency. It helps start long freights without shock and damage to fruit. The added power speeds up transportation through the yards, over heavy grades, and helps bring such freight through on time.

The Booster serves the fruit-grower well and at the same time provides the railroads using it with low cost haulage per ton mile that makes this exacting service profitable.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933—CONTINUED

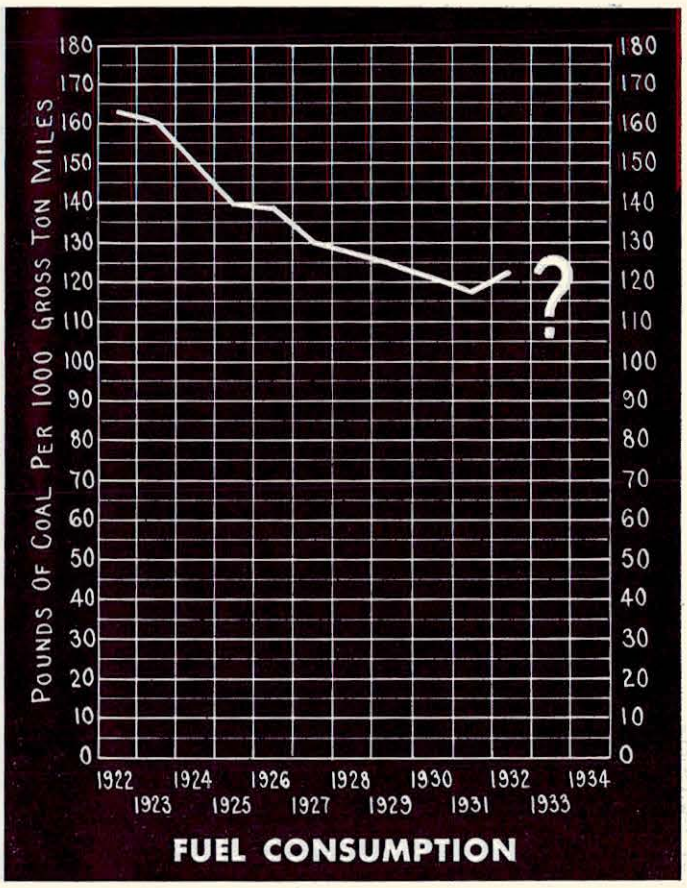
Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
Chicago & Illinois Midland	June	131	$228,236	$722	$235,794	$23,318	$43,302	$14,468	$53,937	$14,910	$149,943	63.6	$85,851	$77,375	$86,096	—$73,925
	6 mos.	131	1,334,224	6,118	1,383,791	133,570	268,238	94,067	341,746	91,835	931,061	67.3	452,730	401,844	426,797	121,909
Chicago & North Western	June	8,442	5,393,349	977,945	7,046,716	1,247,905	1,149,960	172,572	2,299,246	264,711	5,163,110	73.3	1,883,606	1,307,433	1,086,955	—173,234
	6 mos.	8,442	25,077,559	3,918,395	32,650,340	4,637,187	7,392,142	884,487	13,506,489	1,593,203	28,171,268	86.3	4,479,072	897,025	—442,564	—960,169
Chicago, Burlington & Quincy	June	9,248	5,480,437	602,421	6,855,543	776,683	953,320	240,359	2,176,338	275,482	4,453,302	65.0	2,402,241	1,722,033	1,446,747	490,506
	6 mos.	9,248	27,551,710	2,613,614	34,154,983	3,296,508	5,723,535	1,209,841	12,996,878	1,692,413	25,153,840	73.6	9,001,143	4,962,637	3,263,779	4,450,491
Chicago Great Western	June	1,499	1,208,935	84,866	1,374,737	166,437	163,351	48,712	438,991	48,053	865,902	63.0	508,835	444,459	256,492	17,187
	6 mos.	1,499	5,892,660	246,129	6,592,168	924,813	978,018	298,018	2,633,062	280,848	5,108,133	77.5	1,484,035	1,111,066	—1,518	450,778
Chicago, Indianapolis & Louisville (Estimated)	June	647	524,000	53,000	659,500	60,000	134,000	22,000	245,000	19,000	485,300	73.6	174,200	140,100	53,100	—88,233
	6 mos.	647	2,716,508	247,755	3,369,956	297,208	771,247	125,983	1,466,038	134,667	2,820,964	83.7	548,992	325,808	—184,933	—335,085
Chicago, Mil., St. Paul & Pacific	June	11,242	6,975,224	753,759	8,456,905	906,202	1,406,338	208,841	2,657,450	245,951	5,447,783	64.4	3,009,122	2,349,949	1,840,024	—1,468,432
	6 mos.	11,242	33,223,158	2,437,039	39,491,189	3,715,246	8,188,626	1,201,084	15,231,844	1,531,765	30,028,090	76.0	9,463,099	5,488,463	2,926,578	—2,927,232
Chicago River & Indiana	June	20	.....	.....	415,312	15,000	25,000	1,528	117,329	9,769	168,626	40.6	246,686	223,005	284,137	183,169
	6 mos.	20	.....	.....	2,110,187	71,500	131,000	8,722	666,613	61,255	939,090	44.5	1,171,097	1,030,339	1,361,099	1,202,860
Chicago, Rock Island & Pacific	June	7,611	4,909,710	607,258	6,054,873	494,534	1,022,129	171,198	1,983,075	241,822	3,968,181	65.5	2,086,692	1,621,195	1,362,268	303,903
	6 mos.	7,611	23,811,122	2,529,330	29,217,821	2,601,450	5,899,235	1,006,198	11,939,452	1,513,230	23,282,041	79.7	5,935,780	3,141,450	1,484,880	1,280,793
Chicago, Rock Island & Gulf	June	721	310,638	16,378	326,247	34,000	36,158	14,037	110,099	17,962	215,056	65.9	111,191	91,085	4,485	27,449
	6 mos.	721	1,541,182	103,296	1,637,549	188,130	194,585	87,607	591,229	107,469	1,183,304	72.3	454,245	327,610	—137,953	245,591
Chicago, St. Paul, Minn. & Omaha	June	1,691	1,249,671	138,619	1,487,725	136,000	189,047	34,438	525,247	68,311	961,431	64.6	526,294	444,216	374,708	—23,216
	6 mos.	1,721	5,409,454	600,904	6,514,304	695,012	1,024,569	187,494	3,062,643	394,252	5,404,405	83.0	1,109,899	637,655	242,324	—467,226
Cincinnati Union Terminal	June	45	.....	.....	4,206	11,762	6,413	.....	79,547	8,330	106,052	2,521.4	—101,846	—129,922	—131,200	.....
	3 mos.	45	.....	.....	13,327	31,277	16,164	.....	246,956	19,386	313,783	2,354.5	—300,456	—384,694	—388,411	.....
Clinchfield Railroad	June	309	392,657	1,713	398,834	33,563	82,208	15,393	68,320	12,669	212,153	53.2	186,681	131,681	151,592	—18,279
	6 mos.	309	2,206,777	10,839	2,245,175	199,585	481,953	91,939	389,931	77,924	1,241,332	55.3	1,003,843	673,605	745,340	307,161
Colorado & Southern	June	1,029	317,260	25,620	388,140	62,698	86,734	12,407	147,095	33,225	342,858	88.3	45,282	—21,543	—36,814	—77,252
	6 mos.	1,029	1,831,805	119,911	2,206,909	262,783	555,842	69,614	951,303	191,574	2,029,594	92.0	177,315	—173,793	—259,068	—268,143
Fort Worth & Denver City	June	804	397,769	29,421	489,292	36,215	71,490	15,178	130,834	31,439	286,634	58.6	202,658	155,216	132,231	79,451
	6 mos.	804	1,863,528	155,834	2,376,830	153,213	394,301	91,023	775,260	193,151	1,612,976	67.9	763,854	579,871	441,998	442,487
Columbus & Greenville	June	167	56,148	3,259	65,045	9,349	9,141	2,857	21,742	7,855	50,944	78.3	14,101	12,213	16,148	—4,086
	6 mos.	167	280,749	18,934	327,361	63,387	51,882	16,622	136,236	47,418	315,545	96.4	11,816	2,641	15,115	—14,282
Conemaugh & Black Lick	June	20	27,328	.....	55,320	6,566	9,543	280	24,653	2,736	43,778	79.1	11,542	11,242	12,001	—5,870
	6 mos.	20	95,707	.....	194,141	28,738	42,602	1,682	96,064	15,705	184,791	95.2	9,350	7,550	14,693	—34,700
Delaware & Hudson	June	848	1,624,503	82,121	1,833,934	284,698	470,093	48,587	699,542	141,355	1,646,542	89.8	187,392	106,825	92,382	—299,377
	6 mos.	852	8,635,112	469,528	9,747,598	1,603,516	2,917,115	288,863	4,360,046	818,346	9,992,916	102.5	—245,318	—738,577	—684,926	—84,659
Delaware, Lackawanna & Western	June	998	2,883,667	563,392	3,958,314	365,631	692,938	109,414	1,474,858	146,758	2,817,826	71.2	1,140,488	719,893	672,714	—61,053
	6 mos.	998	14,534,246	3,091,194	20,502,698	1,807,064	4,291,085	649,724	9,154,653	908,806	16,965,922	82.7	3,536,776	1,074,327	867,517	1,937,671
Denver & Rio Grande Western	June	2,513	1,084,404	132,396	1,320,347	142,392	297,919	44,752	400,042	71,801	962,479	72.9	357,868	221,790	196,530	—74,462
	6 mos.	2,513	6,149,185	374,748	7,003,209	738,350	1,744,599	262,783	2,404,116	435,259	5,601,391	80.0	1,401,818	538,054	581,848	76,940
Denver & Salt Lake	June	232	93,716	4,085	110,234	22,337	21,374	1,383	23,498	10,675	71,149	64.5	39,085	26,085	45,341	18,236
	6 mos.	232	551,151	27,625	641,669	99,543	132,023	8,897	136,917	67,446	429,584	69.9	212,085	128,817	186,180	252,360
Detroit & Mackinac	June	242	48,851	2,280	60,446	16,850	8,761	933	20,580	3,355	50,071	82.8	10,375	5,751	5,444	7,703
	6 mos.	242	220,687	10,933	268,215	62,529	44,206	5,938	125,659	20,749	258,628	96.4	9,587	—4,316	—5,496	—4,057
Detroit & Toledo Shore Line	June	50	190,504	.....	191,909	21,852	18,165	8,749	50,323	7,175	106,238	55.4	85,671	69,118	31,040	—15,440
	6 mos.	50	1,227,854	.....	1,235,723	104,351	115,793	40,021	317,312	46,146	623,596	50.5	612,127	493,405	259,432	182,588
Detroit Terminal	June	19	.....	.....	62,993	4,497	7,390	.....	30,559	2,524	44,970	71.4	18,023	5,756	7,826	—15,974
	6 mos.	19	.....	.....	318,008	25,693	44,889	.....	170,644	15,613	256,839	80.8	61,169	—5,358	—12,920	—48,388
Detroit, Toledo & Ironton	June	472	300,835	917	315,286	35,469	49,148	9,191	85,280	16,221	193,490	61.4	121,796	93,983	87,274	100,545
	6 mos.	472	1,733,854	2,061	1,795,111	161,265	307,994	55,081	508,684	106,339	1,130,805	63.0	664,306	468,238	397,200	336,540
Duluth, Missobe & Northern	June	563	694,450	2,911	787,340	111,486	116,197	3,304	159,439	36,422	426,848	54.2	360,492	251,502	253,467	—226,606
	6 mos.	563	1,521,158	8,442	1,757,301	495,946	759,848	17,880	771,968	238,421	2,284,063	130.0	—526,762	—696,341	—695,905	—2,047,699
Duluth, Winnipeg & Pacific	June	178	67,649	3,598	74,208	23,223	10,022	2,389	31,098	4,170	70,740	95.3	3,468	—466	13,737	—13,890
	6 mos.	178	313,874	10,366	340,425	115,055	109,798	13,979	194,164	25,605	458,419	134.7	—117,994	—135,826	—29,402	19,968
Elgin, Joliet & Eastern	June	446	932,917	5	1,031,444	88,700	172,887	11,278	311,129	42,767	626,650	60.8	404,794	297,018	243,353	—168,055
	6 mos.	446	3,878,363	6	4,192,989	420,568	937,735	68,274	1,622,136	261,455	3,309,939	78.9	883,050	271,029	45,594	—517,496
Erie Railroad	June	2,046	4,668,929	458,376	5,625,817	531,840	1,051,480	132,040	1,839,407	225,807	3,789,816	67.4	1,836,001	1,493,839	1,398,270	442,094
	6 mos.	2,046	24,086,927	2,493,045	29,088,470	2,675,286	6,311,839	778,976	10,869,922	1,390,695	22,081,234	75.9	7,007,236	4,948,373	4,354,254	3,801,408

Continued on next left-hand page

Halt

the Upward Trend of

Fuel Consumption

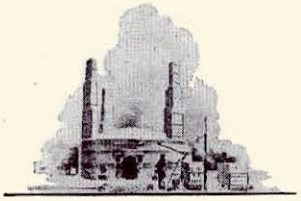


Railroad fuel consumption has started upward after 10 years of steady decrease.

Each ton of freight in 1932 required more fuel to haul than in 1931.

To assist in winning back the lost ground, make sure that full use is being made of all fuel-saving factors such as the Locomotive Arch.

Every locomotive leaving the roundhouse should have every course and all Arch Brick in place.



There's More To
SECURITY ARCHES
Than Just Brick

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

Revenues and Expenses of Railways

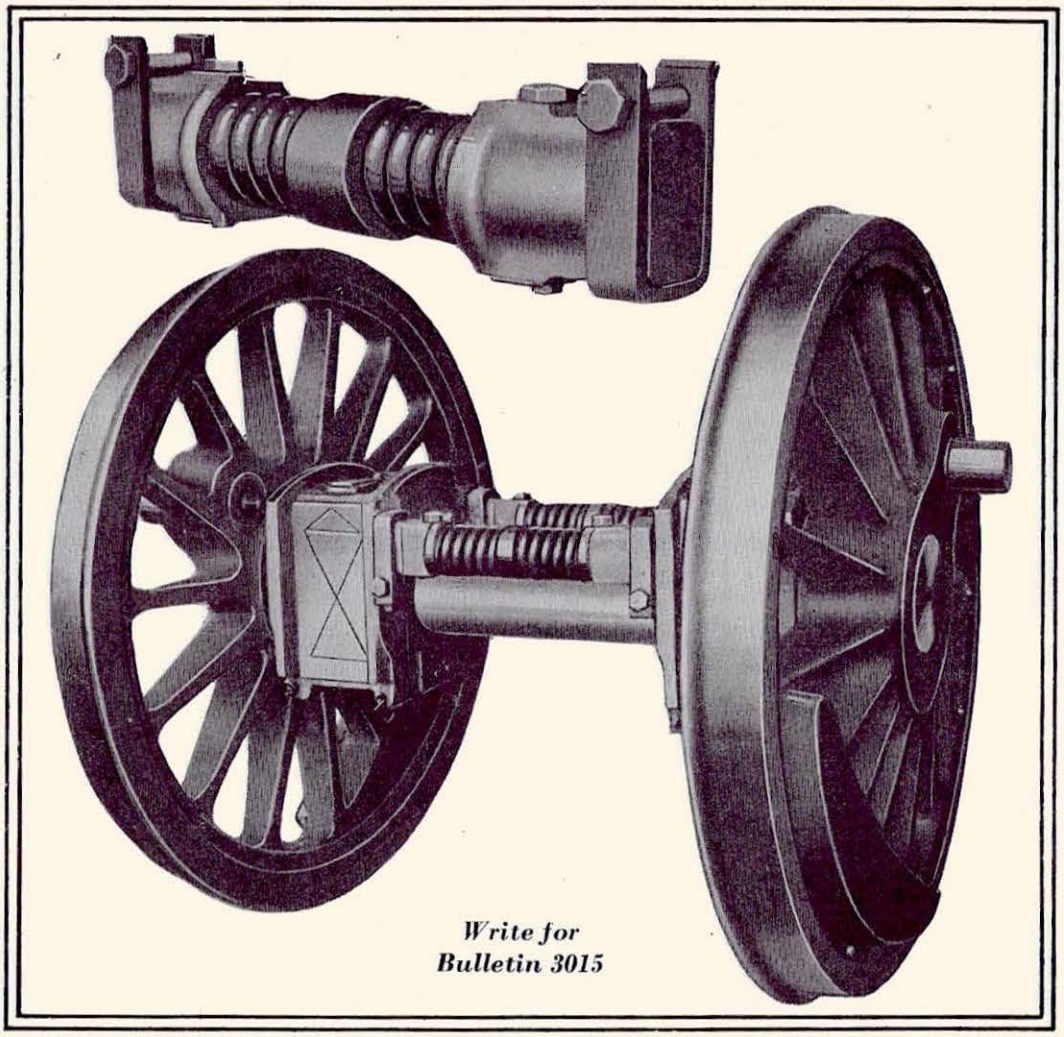
MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Maintenance of—Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
Chicago & Erie	June	269	$724,549	$29,529	$821,755	$88,786	$91,493	$22,773	$187,820	$30,651	$421,494	51.3	$400,261	$364,208	$154,710	—$30,641
	6 mos.	269	3,742,602	95,047	4,106,296	426,973	528,784	133,266	1,121,939	193,678	2,402,354	58.5	1,703,942	1,488,607	336,751	—61,701
New Jersey & New York	June	45	15,842	60,719	78,814	7,691	23,887	1,342	43,728	3,426	80,074	101.6	—1,260	—6,260	—24,506	—22,367
	6 mos.	45	91,446	384,067	486,586	45,634	144,456	8,364	285,049	20,323	503,826	103.5	—17,240	—47,305	—158,662	—123,660
N. Y., Susquehanna & Western	June	131	210,942	27,824	253,462	30,259	50,520	4,062	97,279	10,952	193,071	76.2	60,391	30,177	18,002	8,081
	6 mos.	131	1,289,494	163,305	1,534,631	145,963	293,577	25,824	618,059	63,198	1,146,619	74.7	388,012	206,423	121,707	185,916
Florida East Coast	June	839	211,781	47,249	321,246	106,805	120,247	18,072	131,099	37,845	418,084	130.1	—96,838	—172,505	—213,407	—275,841
	6 mos.	839	2,969,065	1,001,797	4,464,466	611,834	783,399	120,540	1,083,045	236,902	2,869,237	64.3	1,595,229	1,143,370	845,456	491,882
Fort Smith & Western	June	249	46,558	946	51,009	13,042	7,947	4,289	18,041	3,871	47,348	92.8	3,661	1,668	—3,679	—16,276
	6 mos.	249	277,278	5,141	305,328	76,503	56,566	25,798	109,309	24,377	293,454	96.1	11,874	—2,023	—24,529	—65,082
Galveston Wharf	June	11	.....	.....	86,818	33,191	3,652	3,315	21,329	5,909	71,277	82.1	15,541	—4,485	—4,430	8,354
	6 mos.	11	.....	.....	529,569	186,281	19,996	18,756	118,691	35,154	401,944	75.9	127,625	7,512	7,728	197,423
Georgia Railroad	June	329	217,931	12,973	251,316	32,442	42,680	16,150	112,951	11,770	215,829	85.9	35,487	30,640	41,886	969
	6 mos.	329	1,299,025	68,950	1,481,112	168,202	267,483	96,151	650,503	74,729	1,258,033	84.9	223,079	188,720	234,613	59,898
Georgia & Florida	June	463	81,025	1,498	87,334	15,579	15,117	7,741	32,665	5,680	76,641	87.8	10,693	5,693	6,850	—13,440
	6 mos.	463	387,561	6,507	421,315	93,584	83,614	48,203	185,754	37,810	449,715	106.7	—28,400	—58,606	—67,596	—125,232
Grand Trunk Western	June	1,002	1,336,235	52,408	1,485,505	271,244	296,916	36,843	560,464	81,201	1,250,009	84.2	235,496	165,928	87,562	—205,624
	6 mos.	1,002	6,595,218	274,169	7,385,424	1,156,413	1,654,979	215,623	3,259,972	462,100	6,762,474	91.6	622,950	108,709	—461,639	—959,908
Canadian Nat'l Lines in New Eng.	June	172	65,461	5,940	80,972	19,927	17,129	3,180	48,203	8,792	97,701	120.7	—16,729	—30,860	—68,186	—40,896
	6 mos.	172	378,511	37,612	474,350	101,972	99,228	18,398	311,687	51,639	591,279	124.6	—116,929	—201,708	—416,149	—461,570
Great Northern	June	8,452	4,514,776	493,760	5,498,817	318,649	870,462	164,817	1,574,127	194,691	3,169,569	57.6	2,329,248	1,726,337	1,601,504	—695,730
	6 mos.	8,453	20,715,246	1,591,262	24,731,858	2,051,536	5,223,516	942,424	9,429,854	1,124,188	18,976,696	76.7	5,755,162	2,419,231	1,456,518	—3,082,980
Green Bay & Western	June	234	92,274	917	97,218	25,357	14,577	4,216	37,975	2,838	84,944	87.3	12,274	6,750	220	7,086
	6 mos.	234	490,864	5,345	513,110	110,875	73,522	26,202	231,129	15,714	457,174	89.0	55,936	21,412	9,820	20,299
Gulf & Ship Island	June	307	82,424	4,325	96,355	13,840	9,782	1,836	35,744	4,069	65,271	67.7	31,084	13,936	5,555	—37,713
	6 mos.	307	450,102	35,854	549,698	67,029	91,025	12,079	249,159	23,450	444,041	80.8	105,657	—2,687	—71,533	—144,997
Gulf, Mobile & Northern	June	707	296,189	5,852	319,353	35,963	45,775	22,102	82,857	18,010	204,707	64.10	114,646	93,634	73,911	—26,098
	6 mos.	729	1,464,942	40,414	1,590,758	200,324	248,259	121,170	506,646	95,576	1,171,975	73.67	418,783	292,558	166,461	—112,083
Illinois Central	June	5,014	5,497,637	769,200	6,852,203	521,872	1,183,267	148,829	2,215,022	316,101	4,415,303	64.4	2,436,900	2,021,569	1,929,452	274,234
	6 mos.	5,014	28,594,773	3,446,772	35,342,320	2,421,743	7,140,889	907,035	13,230,582	1,670,552	25,535,746	72.3	9,806,574	7,044,933	6,268,926	4,977,715
Yazoo & Mississippi Valley	June	1,673	978,353	49,495	1,094,847	56,480	120,063	18,999	363,627	44,465	604,659	55.2	490,188	384,048	282,334	—13,739
	6 mos.	1,673	4,678,340	285,998	5,384,634	330,204	765,949	121,380	2,209,117	237,879	3,668,031	68.1	1,716,603	985,468	376,347	—137,889
Illinois Central System	June	6,687	6,475,990	818,695	7,947,050	578,352	1,303,330	167,828	2,578,649	360,566	5,019,962	63.2	2,927,088	2,405,617	2,211,786	260,495
	6 mos.	6,687	33,273,113	3,732,770	40,726,954	2,751,947	7,906,838	1,028,415	15,439,699	1,908,431	29,203,777	71.7	11,523,177	8,030,401	6,645,273	4,839,826
Illinois Terminal	June	540	345,015	47,276	405,274	54,356	46,007	13,759	135,078	16,525	265,280	65.46	139,994	114,938	84,793	38,788
	6 mos.	542	1,814,935	282,351	2,171,519	239,835	286,708	84,961	824,880	102,439	1,538,186	70.83	633,333	490,199	322,418	272,602
Kansas City Southern	June	783	678,432	15,285	786,373	70,797	124,049	40,900	221,242	59,338	516,317	65.7	270,056	193,798	152,051	34,143
	6 mos.	783	3,530,593	78,076	4,113,890	404,374	714,558	235,831	1,290,477	355,754	3,006,468	73.1	1,107,422	649,656	515,590	414,622
Texarkana & Fort Smith	June	98	76,151	1,193	88,935	8,727	14,101	5,985	21,626	8,419	59,573	67.0	29,362	21,447	6,430	—288
	6 mos.	98	380,098	5,963	463,857	43,778	44,572	32,809	145,784	48,825	320,769	69.2	143,088	96,990	—8,218	—1,507
Kansas, Oklahoma & Gulf	June	326	163,350	220	166,111	21,012	13,667	6,645	33,221	7,812	82,357	49.6	83,754	64,291	50,915	15,981
	6 mos.	326	816,736	1,672	834,504	89,658	69,155	39,927	204,872	46,026	449,377	53.8	385,127	284,444	204,999	176,976
Lake Superior & Ishpeming	June	160	146,042	65	166,695	19,952	12,749	477	25,674	5,263	64,115	38.5	102,580	90,062	89,167	—43,296
	6 mos.	160	278,256	446	310,834	97,914	73,855	2,958	102,770	32,698	310,195	99.8	639	—55,782	—61,304	—258,022
Lake Terminal	June	12	.....	.....	84,517	3,986	5,498	.....	25,057	2,670	37,211	44.0	47,306	43,467	46,904	1,178
	6 mos.	12	.....	.....	235,393	20,023	25,451	.....	96,406	15,239	157,119	66.7	78,274	60,270	63,691	—26,580
Lehigh & Hudson River	June	96	112,726	380	119,831	13,471	18,130	3,232	37,832	6,460	79,125	66.0	40,706	29,643	18,673	—455
	6 mos.	96	635,407	1,641	681,741	59,806	117,296	19,644	237,569	37,919	472,234	69.3	209,507	141,293	72,580	40,713
Lehigh & New England	June	228	268,008	420	270,414	38,509	54,540	4,477	83,983	14,711	196,220	72.6	74,194	62,159	69,881	33,411
	6 mos.	228	1,386,266	2,495	1,401,235	170,250	298,295	30,055	527,494	96,577	1,122,657	80.1	278,578	228,694	280,184	344,766
Lehigh Valley	June	1,359	2,926,381	200,104	3,402,157	303,960	615,793	104,613	1,280,740	119,417	2,439,984	71.7	962,173	794,769	684,823	—10,293
	6 mos.	1,360	15,092,344	1,058,079	17,632,806	1,367,844	3,843,597	637,835	7,802,325	737,413	14,469,610	82.1	3,163,196	1,694,863	1,021,246	1,464,929
Louisiana & Arkansas	June	608	313,042	7,741	343,543	55,020	63,905	19,402	75,086	19,539	233,453	68.0	110,090	78,773	66,382	54,895
	6 mos.	608	1,801,657	42,736	1,983,772	231,707	346,104	117,958	468,579	105,727	1,268,500	63.9	715,272	531,831	428,959	306,465
Louisiana, Arkansas & Texas	June	255	75,182	216	81,593	17,021	8,592	3,499	23,398	4,878	57,524	70.5	24,069	21,621	11,744	—5,722
	6 mos.	255	341,434	1,359	377,188	98,503	45,398	19,553	141,597	26,399	331,586	87.9	45,602	31,775	—30,934	—42,940

Continued on next left-hand page

ALCO

LATERAL DRIVING BOX CUSHIONING DEVICE



Write for Bulletin 3015

Softens the grinding pressure between tire flanges and rails, and between wheel hubs and box faces ~ ~ ~ Relieves lateral stresses in locomotive and track without disturbing distribution of weight on journals ~ ~ ~ Improves riding qualities ~ ~ ~ Increases life of tires and rails ~ ~ ~ It is light in weight, inexpensive, and can be applied easily to locomotives in all classes of service.

AMERICAN LOCOMOTIVE CO.

30. CHURCH ST. alco NEW YORK·N·Y·

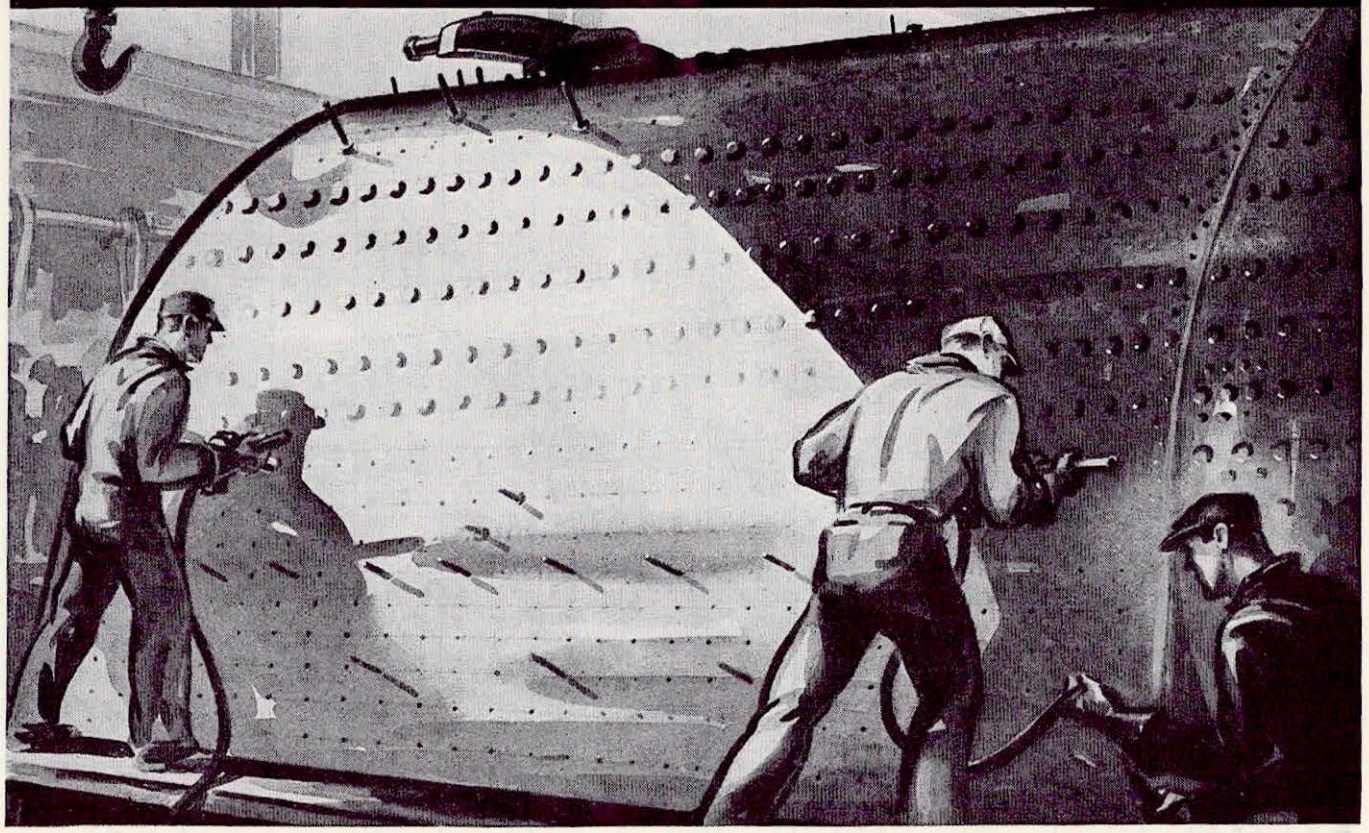
Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
Louisville & Nashville	June	5,125	$4,683,027	$404,838	$5,508,289	$616,936	$1,147,887	$177,845	$1,936,004	$264,794	$4,175,517	75.8	$1,332,772	$957,413	$1,052,966	—$1,740
	6 mos.	5,155	25,697,958	2,065,751	30,233,815	3,468,415	6,530,933	1,015,400	11,086,405	1,564,039	23,831,475	78.8	6,402,340	4,142,774	4,187,622	984,728
Maine Central	June	1,117	755,616	101,556	956,406	165,463	132,332	11,811	288,935	38,039	636,536	66.5	319,870	273,047	233,129	228,456
	6 mos.	1,117	4,056,281	427,502	5,011,796	672,769	753,528	62,440	1,912,488	226,884	3,627,478	72.3	1,384,317	1,103,415	876,035	797,575
Midland Valley	June	363	109,433	336	113,972	18,680	9,606	2,090	24,847	6,753	61,960	54.4	52,012	43,520	37,715	27,129
	6 mos.	363	613,685	2,358	639,369	90,028	60,553	13,853	165,579	41,028	371,004	58.0	268,365	213,124	174,807	175,176
Minneapolis & St. Louis	June	1,627	673,142	19,801	733,205	87,264	120,601	22,062	286,322	31,865	547,924	74.7	185,281	141,636	118,188	—132,411
	6 mos.	1,627	3,189,990	81,307	3,502,809	378,005	785,265	160,873	1,716,465	211,159	3,247,516	92.7	255,293	18,401	—112,385	—482,571
Minn., St. Paul & S. S. Marie	June	4,315	1,840,199	100,797	2,108,489	265,667	319,948	68,109	702,524	105,846	1,468,294	69.6	640,195	471,301	346,292	—148,982
	6 mos.	4,329	8,523,781	421,362	9,770,116	1,432,541	2,043,023	364,517	4,276,358	645,926	8,779,030	89.9	991,086	94,664	—600,227	—1,672,604
Duluth, South Shore & Atlantic	June	563	142,870	9,702	168,701	38,474	26,509	5,162	62,432	5,287	137,647	81.6	31,054	15,106	11,549	—28,532
	6 mos.	562	677,668	54,316	804,279	164,261	176,807	33,168	389,369	35,765	801,135	99.6	3,144	—117,767	—140,705	—283,677
Spokane International	June	163	40,328	1,553	46,020	11,960	4,797	2,085	18,479	4,419	41,650	90.5	4,370	—480	—2,442	—11,492
	6 mos.	163	165,483	9,351	196,564	66,874	27,425	12,091	112,455	25,107	243,862	124.1	—47,298	—76,389	—87,012	—88,817
Mississippi Central	June	150	57,163	1,764	60,908	8,234	12,021	6,206	15,990	4,954	47,405	77.8	13,503	10,515	6,673	—5,059
	6 mos.	150	262,507	6,191	279,364	54,447	60,262	36,256	91,118	30,476	272,562	97.6	6,802	—8,717	—30,508	—72,446
Missouri & North Arkansas	June	364	58,536	943	66,486	20,132	16,591	4,775	25,271	5,601	72,370	108.8	—5,884	—8,813	—18,004	—18,232
	6 mos.	364	337,693	5,959	379,090	93,099	61,160	31,400	149,539	31,969	367,152	96.9	11,938	—3,447	—52,710	—86,543
Missouri-Illinois	June	202	70,161	281	72,183	15,644	9,157	2,815	22,459	4,399	54,474	75.5	17,709	10,849	4,898	3,814
	6 mos.	202	362,223	1,910	373,971	76,180	71,056	14,747	130,826	31,934	324,673	86.8	49,298	11,255	—31,868	7,152
Missouri-Kansas-Texas Lines	June	3,293	1,907,924	161,806	2,285,261	284,137	356,462	107,624	698,430	138,441	1,598,909	70.0	686,352	495,601	328,888	227,336
	6 mos.	3,293	9,254,278	840,680	11,304,372	1,571,427	1,887,840	626,011	4,222,408	825,678	9,204,182	81.4	2,100,190	927,153	—55,113	911,413
Missouri Pacific	June	7,412	5,494,965	339,424	6,369,182	836,702	1,210,628	199,742	2,031,287	243,806	4,490,525	70.5	1,878,657	1,528,443	1,134,875	476,007
	6 mos.	7,412	26,701,244	1,685,793	31,344,757	3,718,623	6,402,328	1,228,329	11,822,419	1,522,054	24,726,096	78.9	6,618,661	4,444,200	2,450,757	3,053,608
Gulf Coast Lines	June	1,800	438,473	27,763	509,215	107,392	130,933	37,843	187,454	43,064	505,577	99.29	3,638	46,160	103,374	86,213
	6 mos.	1,802	3,940,356	165,917	4,353,537	601,472	741,627	229,888	1,397,148	273,617	3,229,386	74.17	1,124,151	824,114	222,677	962,977
International-Great Northern	June	1,159	1,243,252	58,125	1,380,656	191,573	256,579	23,639	400,547	42,480	922,005	66.78	458,651	421,783	255,791	43,738
	6 mos.	1,159	5,816,338	279,170	6,571,015	767,114	1,084,329	154,493	2,241,825	266,302	4,555,154	69.32	2,015,861	1,792,951	970,411	1,739
San Antonio, Uvalde & Gulf	June	316	40,703	2,519	47,152	15,098	8,971	3,884	16,339	4,435	48,594	103.1	—1,442	—5,055	—23,658	—2,679
	6 mos.	316	315,745	17,001	360,608	85,756	62,320	23,711	109,101	26,278	306,250	84.9	54,358	31,622	—97,005	9,569
Mobile & Ohio	June	1,201	675,767	15,531	728,552	76,155	148,855	39,991	251,826	38,251	554,968	76.2	173,584	131,731	69,363	—85,576
	6 mos.	1,230	3,486,474	94,962	3,805,470	446,730	773,372	229,997	1,473,207	221,507	3,145,357	82.7	660,113	413,420	41,687	—344,134
Monongahela	June	177	319,826	474	322,257	24,620	20,160	456	52,970	5,482	103,688	32.2	218,569	199,478	126,135	89,012
	6 mos.	177	1,562,268	3,574	1,575,426	114,189	127,888	4,429	321,784	44,758	613,066	38.9	962,360	875,975	471,519	533,858
Monongahela Connecting	June	6	.....	.....	83,244	13,395	17,237	45	36,954	2,590	70,221	84.3	13,023	8,490	7,725	22,015
	6 mos.	6	.....	.....	278,530	57,099	86,667	270	161,331	15,745	321,112	115.3	—42,582	—69,347	—66,390	—129,700
Montour	June	57	200,989	.....	202,446	15,983	41,075	1,151	31,525	6,751	96,485	47.7	105,961	103,231	122,793	14,118
	6 mos.	57	758,829	.....	765,642	64,867	187,816	7,102	161,045	41,141	461,971	60.3	303,671	287,332	395,523	271,395
Nashville, Chattanooga & St. Louis	June	1,203	915,151	60,382	1,080,504	143,027	241,751	54,227	382,584	54,239	880,713	81.5	199,791	160,347	141,394	26,014
	6 mos.	1,203	5,110,819	354,756	6,077,920	816,487	1,343,801	327,802	2,292,140	324,096	5,129,625	84.4	948,295	740,261	643,979	101,059
Nevada Northern	June	165	18,751	409	22,820	8,420	3,483	705	6,043	3,324	21,975	96.3	845	—6,427	—2,082	355
	6 mos.	165	91,413	7,225	121,268	51,006	23,719	4,299	43,425	19,815	142,264	117.3	—20,995	—65,210	—39,184	—19,380
Newburgh & South Shore	June	6	.....	.....	34,170	3,081	14,729	.....	14,794	3,670	36,274	106.2	—2,104	—10,894	—5,206	—16,650
	6 mos.	6	.....	.....	243,077	21,861	103,537	.....	126,863	26,829	279,090	114.8	—36,013	—88,658	—65,855	—84,128
New Orleans Great Northern	June	262	144,841	7,069	157,142	14,921	31,067	12,020	40,687	7,111	105,806	67.3	51,336	41,435	21,026	—10,820
	6 mos.	262	770,974	35,446	831,620	68,472	118,336	68,331	230,439	40,705	526,283	63.3	305,337	245,833	110,063	30,070
New Orleans Terminal	June	20	2,084	.....	106,111	8,857	5,987	.....	25,991	995	41,830	39.4	64,281	52,378	44,849	35,836
	6 mos.	20	7,582	.....	661,767	47,147	33,109	.....	156,859	6,207	243,322	36.8	418,445	349,663	273,475	202,012
New York Central	June	11,435	16,940,722	5,005,301	25,025,100	2,212,513	4,771,231	501,185	8,193,743	985,039	16,973,640	67.8	8,051,460	5,606,899	4,384,965	192,052
	6 mos.	11,435	90,100,606	23,678,256	130,871,662	10,886,021	26,427,116	2,814,309	48,824,221	5,888,989	96,520,035	73.8	34,351,627	19,718,502	12,493,512	7,485,306
Indiana Harbor Belt	June	120	.....	.....	668,960	18,000	60,000	3,312	236,381	17,108	341,652	51.1	327,308	270,630	208,283	100,114
	6 mos.	120	.....	.....	3,546,395	197,000	345,000	18,627	1,402,355	104,552	2,113,279	59.6	1,433,116	1,152,085	854,914	636,562
Pittsburgh & Lake Erie	June	231	1,386,134	41,215	1,480,397	121,375	428,245	24,353	419,476	53,386	1,047,703	70.8	432,694	326,026	438,917	56,123
	6 mos.	233	5,633,588	245,820	6,097,911	457,358	2,118,138	142,915	2,167,980	343,853	5,237,971	85.9	859,940	345,175	1,009,389	717,145
New York, Chicago & St. Louis	June	1,690	2,634,035	108,939	2,855,143	251,507	362,700	91,504	866,951	107,834	1,684,841	59.0	1,170,302	1,030,347	766,929	25,660
	6 mos.	1,690	13,300,764	357,186	14,188,051	1,273,440	2,213,299	571,362	4,978,880	665,830	9,710,266	68.4	4,477,785	3,504,445	2,096,694	565,386

Continued on next left-hand page

BIG FIREBOXES NEED BETTER MATERIALS



Big fireboxes have brought new troubles to the boilermaker. The increased stress; higher pressures and larger stayed surfaces all conspire to shorten the life of firebox sheets. The old time steel sheet cracks, fails and must be renewed in a comparatively short time. » » » Toncan Iron, however, has an exceptional resistance to fire-cracking and on scores of Super-Power Locomotives is outlasting steel sheets many times. » » » Moreover, its alloy composition of refined iron, copper and molybdenum resists the above conditions that weaken ordinary sheets.

CENTRAL ALLOY DIVISION, MASSILLON, OHIO

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Staybolts, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

The Birdsboro Steel Foundry & Machine Company of Birdsboro, Pa. has manufactured and is prepared to supply under license, Toncan Copper Molybdenum Iron castings for locomotives.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

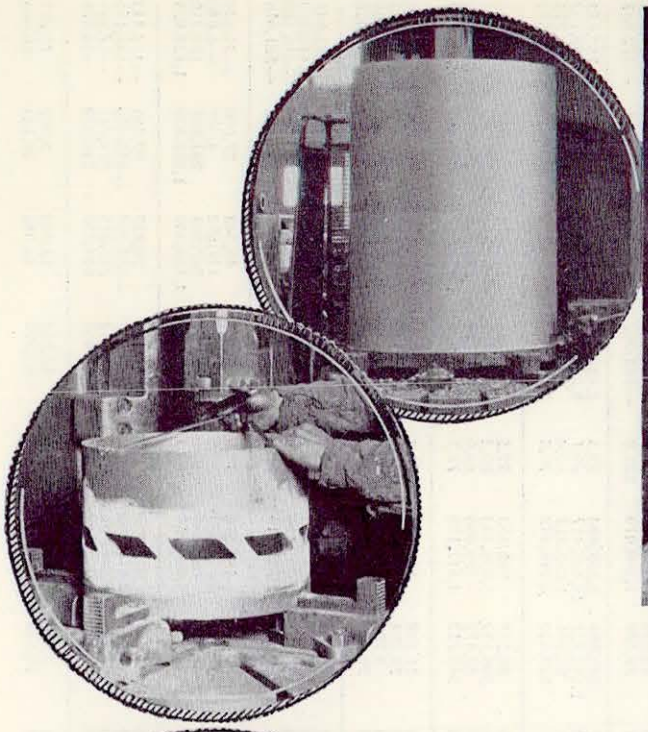
REG. U.S. PAT. OFF. TONCAN COPPER MO-LYB-DEN-UM IRON

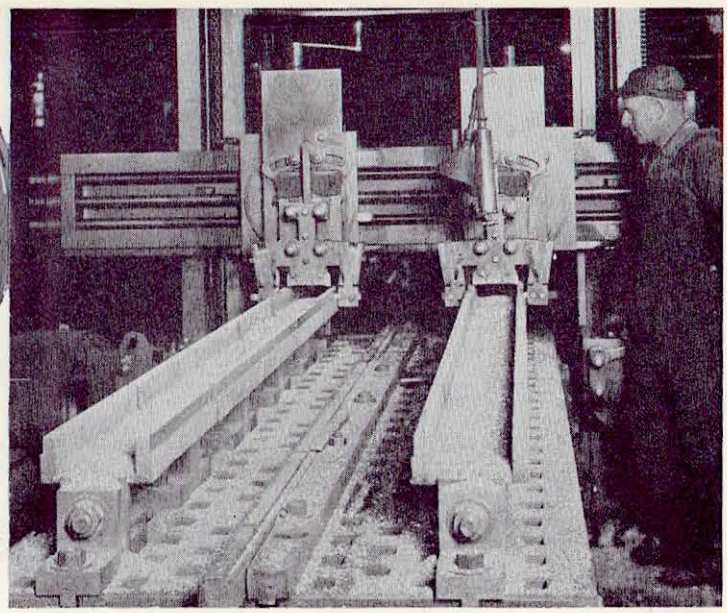
Revenues and Expenses of Railways

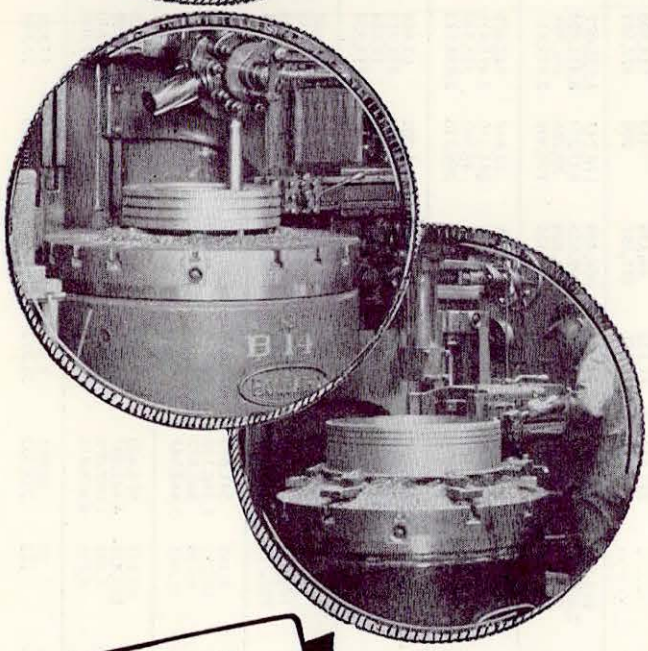
MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
New York, New Haven & Hartford	June	2,065	$3,596,598	$1,720,797	$6,009,896	$671,708	$942,222	$76,770	$2,046,368	$228,264	$4,070,206	67.7	$1,939,690	$1,564,255	$1,052,186	$805,921
	6 mos.	2,069	17,938,758	9,866,312	31,764,364	3,713,520	5,301,100	449,394	12,231,721	1,390,001	23,776,743	74.9	7,987,621	5,706,827	2,796,857	6,387,706
New York Connecting	June	20	255,432	.....	269,016	24,623	7,026	.....	25,340	788	57,777	21.5	211,239	180,379	141,681	27,984
	6 mos.	20	1,380,088	.....	1,443,206	67,354	41,525	.....	155,064	5,339	269,282	18.7	1,173,924	981,924	731,099	368,707
New York, Ontario & Western	June	568	624,890	42,096	752,751	89,603	124,717	12,060	286,776	22,094	535,900	71.2	216,842	178,609	138,083	91,549
	6 mos.	568	3,957,263	118,372	4,595,212	461,392	837,430	73,387	1,804,600	140,749	3,332,416	72.5	1,262,796	—165,518	809,955	908,360
Norfolk & Western	June	2,233	5,558,582	121,033	5,855,238	545,554	1,020,121	113,404	1,269,552	204,082	3,158,787	53.9	2,696,451	2,021,141	2,108,548	1,173,724
	6 mos.	2,229	28,386,844	638,211	30,039,144	3,092,043	5,927,076	658,514	7,304,514	1,272,450	18,315,672	61.0	11,723,472	7,996,183	8,501,492	6,531,450
Norfolk Southern	June	932	573,002	10,761	604,696	70,973	61,242	18,219	153,634	22,573	326,641	54.0	278,055	238,391	209,272	125,708
	6 mos.	932	2,042,445	45,625	2,191,940	424,220	357,942	114,369	853,708	135,122	1,885,361	86.0	306,579	75,460	—18,069	—145,396
Northern Pacific	June	6,747	3,768,827	488,346	4,628,422	520,477	869,814	155,315	1,455,871	251,928	3,308,204	71.5	1,320,218	768,345	1,039,079	17,284
	6 mos.	6,739	17,003,512	1,435,779	20,373,233	2,828,618	5,593,170	885,233	8,380,350	1,517,570	19,474,693	95.6	898,540	—2,276,113	—722,894	—1,524,640
Northwestern Pacific	June	407	138,369	94,078	263,279	25,630	50,599	4,393	134,088	13,912	228,618	86.8	34,661	12,492	4,594	—19,867
	6 mos.	415	570,629	448,740	1,181,453	200,671	260,253	27,603	743,379	85,986	1,314,936	111.3	—133,483	—269,329	—322,850	—353,665
Oklahoma City-Ada-Atoka	June	132	26,991	204	28,659	4,139	1,008	532	9,449	1,412	16,536	57.7	12,123	6,429	—378	—12,338
	6 mos.	132	155,745	1,576	166,422	23,527	9,442	3,642	58,625	8,813	104,045	62.5	62,377	36,022	—3,254	—20,889
Pennsylvania	June	10,834	21,727,452	4,514,712	29,084,542	1,959,995	5,025,396	504,457	9,183,257	1,210,034	18,149,766	62.4	10,934,776	8,504,133	7,444,758	3,982,301
	6 mos.	10,887	107,890,436	24,657,213	148,271,228	11,409,299	28,649,534	3,017,145	53,835,990	7,451,083	105,710,269	71.3	42,560,959	29,473,646	24,065,977	24,642,651
Long Island	June	399	444,944	1,573,998	2,120,811	123,322	245,469	13,955	789,807	53,814	1,226,727	57.8	894,084	644,231	460,360	471,632
	6 mos.	399	2,787,884	7,981,136	11,380,325	830,142	1,614,710	70,106	4,956,308	322,419	7,794,149	68.5	3,586,176	2,635,011	1,606,929	2,109,641
Peoria & Pekin Union	June	18	7,079	.....	71,097	7,502	6,467	1,865	30,172	6,793	52,799	74.3	18,298	2,760	25,455	2,674
	6 mos.	18	56,456	.....	412,725	45,863	39,629	10,990	185,789	49,558	331,829	80.4	80,896	—7,816	112,294	106,617
Pere Marquette	June	2,288	1,870,709	66,654	2,058,663	233,680	428,208	50,881	682,759	86,147	1,485,693	72.2	572,970	477,329	378,109	—5,243
	6 mos.	2,310	9,581,912	264,213	10,408,556	1,335,437	2,494,183	330,352	4,080,659	526,089	8,789,267	84.4	1,619,289	974,119	443,095	73,695
Pittsburg & Shawmut	June	102	49,017	155	49,769	9,280	13,342	1,272	14,411	4,065	42,370	85.1	7,399	6,579	6,431	8,488
	6 mos.	102	276,135	3,062	283,017	50,391	94,152	8,113	88,917	25,287	266,860	94.3	16,157	12,457	14,071	36,240
Pittsburgh & West Virginia	June	138	259,813	Dr. 44	270,445	22,391	54,016	11,370	45,680	12,053	152,321	56.3	118,124	94,083	134,936	3,574
	6 mos.	138	1,097,478	.....	1,165,640	114,683	280,988	67,186	228,681	73,462	806,309	69.1	359,331	226,138	356,767	123,308
Pittsburgh, Shawmut & Northern	June	195	59,561	163	71,458	20,680	15,326	1,273	23,716	6,538	67,533	94.5	3,925	1,616	—1,750	—14,241
	6 mos.	196	387,088	1,167	418,839	77,631	100,111	7,585	149,969	40,210	375,506	89.6	43,333	29,878	5,739	—4,474
Reading	June	1,461	3,667,302	205,038	4,122,682	232,614	585,365	66,653	1,404,712	184,647	2,490,599	60.4	1,632,083	1,395,786	1,337,705	691,987
	6 mos.	1,461	20,166,047	1,370,838	23,012,786	1,316,308	4,284,509	410,261	8,768,169	1,095,896	15,968,428	69.4	7,044,358	5,746,957	5,393,354	4,452,784
Atlantic City	June	233	85,230	110,865	211,206	15,909	22,801	3,467	147,200	12,330	201,910	95.6	9,296	—42,123	—50,076	—53,311
	6 mos.	179	406,300	277,727	738,027	116,629	93,063	13,229	650,516	33,692	907,955	123.0	—169,928	—406,502	—461,642	—489,000
Richmond, Fredericksburg & Potomac	June	117	362,734	83,509	542,249	54,031	91,323	8,772	191,698	28,843	380,309	70.1	161,940	104,502	73,520	50,729
	6 mos.	117	1,923,187	741,260	3,317,339	317,680	569,426	49,081	1,254,394	178,706	2,423,022	73.0	894,317	683,066	388,113	381,960
Rutland	June	413	207,554	24,819	305,393	63,950	49,846	9,835	129,594	13,133	266,358	87.2	39,035	19,132	40,048	29,186
	6 mos.	413	1,032,542	176,776	1,609,161	261,005	330,124	60,316	750,577	80,663	1,481,827	92.1	127,334	7,930	82,956	159,690
St. Louis-San Francisco	June	5,266	3,146,730	206,846	3,647,847	572,929	722,795	90,153	1,090,976	144,689	2,626,381	72.0	1,021,466	718,552	679,566	199,619
	6 mos.	5,266	15,944,648	1,046,026	18,559,259	3,046,466	4,355,189	537,633	6,416,297	843,433	15,205,632	81.9	3,353,627	1,429,173	1,127,330	1,442,990
Fort Worth & Rio Grande	June	233	31,384	1,618	39,513	16,975	15,888	2,251	20,579	3,510	59,203	149.8	—19,690	—24,059	—30,081	—24,939
	6 mos.	233	165,433	6,772	203,355	99,789	73,415	13,979	133,314	21,362	341,622	168.0	—138,267	—162,773	—203,680	—210,974
St. Louis, San Francisco & Texas	June	262	92,957	705	96,920	20,731	18,784	4,857	33,465	7,438	85,265	88.0	11,655	7,293	—21,639	—28,825
	6 mos.	262	454,731	3,839	477,929	137,127	105,046	29,156	199,970	43,724	514,115	107.6	—36,186	—60,515	—221,251	—275,096
St. Louis Southwestern Lines	June	1,884	1,211,104	15,706	1,277,167	127,966	147,589	68,937	343,133	60,808	754,114	59.0	523,053	441,437	310,470	—10,856
	6 mos.	1,904	5,831,947	81,641	6,196,220	689,439	857,837	415,249	2,032,613	393,702	4,416,929	71.3	1,779,291	1,326,311	684,259	17,395
San Diego & Arizona Eastern	June	155	36,970	3,747	43,131	11,257	8,398	1,821	14,994	4,349	41,371	95.9	1,760	—1,485	—975	—138,195
	6 mos.	155	208,658	29,885	249,608	57,339	51,866	11,124	101,949	27,539	253,213	101.4	—3,605	—23,236	—18,519	—220,777
Seaboard Air Line	June	4,385	1,995,036	141,060	2,401,301	370,596	540,812	126,815	901,408	133,691	2,090,068	87.0	311,233	145,845	126,782	—199,283
	6 mos.	4,385	13,937,604	1,221,901	16,816,226	2,488,325	3,255,369	793,021	5,902,456	781,763	13,374,759	79.5	3,441,467	2,112,885	1,478,350	655,794
Southern Railway	June	6,653	5,716,654	588,748	6,860,266	751,001	1,092,770	149,574	2,205,909	252,088	4,483,612	65.4	2,376,654	1,904,590	1,731,395	—348,843
	6 mos.	6,653	30,518,079	3,168,220	36,823,187	4,111,291	6,891,409	923,977	13,178,455	1,498,452	26,725,657	72.6	10,097,530	7,175,767	6,269,078	634,991
Alabama Great Southern	June	315	368,429	38,981	437,617	51,613	80,263	9,796	129,324	14,348	287,153	65.6	150,464	113,735	114,506	—39,262
	6 mos.	315	1,707,067	180,921	2,063,057	313,182	484,117	57,658	722,160	85,132	1,673,221	81.1	389,836	179,676	138,455	—264,715
Cinn., New Orleans & Tex. Pac.	June	336	977,851	50,853	1,083,628	107,679	170,997	22,527	255,835	36,828	597,226	55.1	486,402	392,115	361,993	74,689
	6 mos.	337	4,846,525	284,629	5,454,796	601,150	1,047,009	133,877	1,417,592	219,590	3,440,861	63.1	2,013,935	1,594,536	1,488,794	698,456

Continued on next left-hand page







Better Control of Production Costs

GOOD castings are just as imperative as good machine tools and good operators if you wish to keep production costs to a steady minimum level.

Castings made of HUNT-SPILLER *Air Furnace* GUN IRON possess the uniform qualities which permit the use of maximum cutting speeds and feeds.

This uniformity is due to a scientific foundry control which also makes possible manufacture of all HSGI Castings very close to finished sizes. Less stock has to be removed — less time is required for each job.

Result: Better control of production and lower machining costs as well as big savings after application.

HSGI

Reg. U. S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Parts Finished For Application

Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER MFG. CORPORATION
J. G. Platt, Pres. & Gen. Mgr. V. W. Ellet, Vice-President

Office & Works
383 Dorchester Ave. South Boston, 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 997 Aqueduct St., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

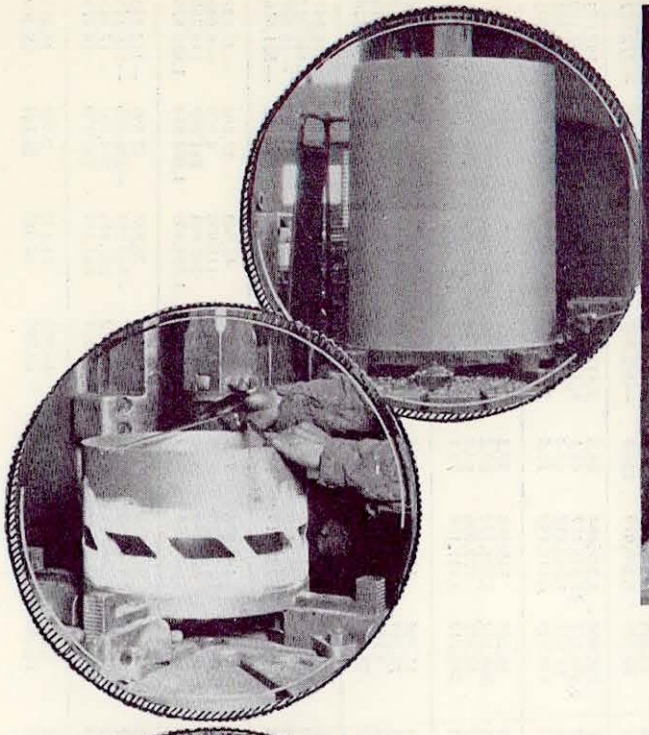
HUNT-SPILLER GUN IRON

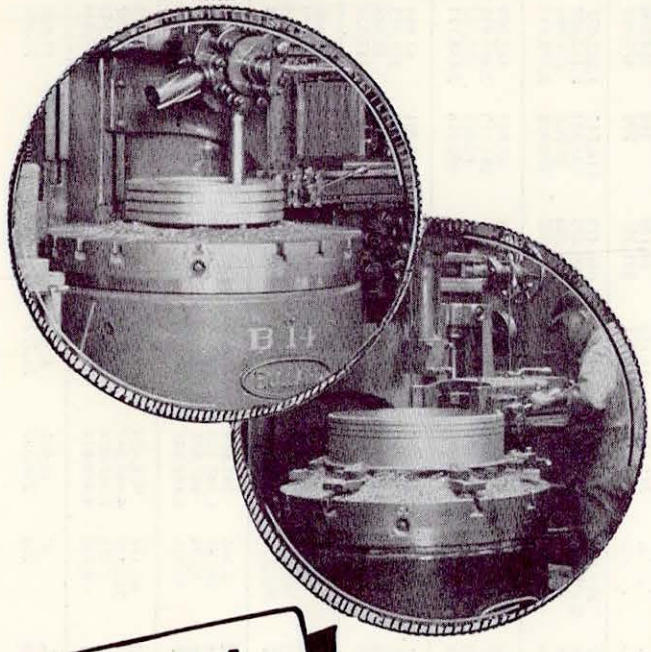
Air Furnace

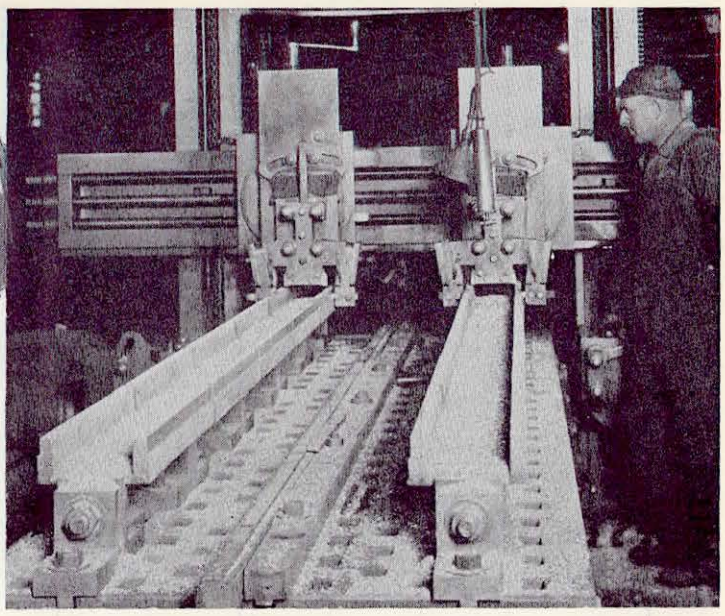
Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
Georgia Southern & Florida	June	397	$115,777	$12,997	$144,477	$29,090	$33,198	$2,209	$65,930	$2,205	$134,178	92.9	$10,299	—$2,197	—$10,763	$4,555
	6 mos.	397	609,690	120,333	836,345	147,388	198,510	11,795	307,272	13,606	691,253	82.7	145,092	56,915	16,724	45,240
New Orleans & Northeastern	June	204	145,207	16,850	174,231	23,660	35,417	5,296	58,758	8,717	133,068	76.4	41,163	10,433	—8,178	—50,995
	6 mos.	204	706,403	81,511	857,070	145,915	225,730	31,565	346,806	50,757	808,244	94.3	48,826	—135,652	—227,227	—240,474
Northern Alabama	June	99	43,498	1,324	46,395	8,573	1,227	1,079	13,993	1,648	26,522	57.2	19,873	15,409	2,515	—17,523
	6 mos.	99	237,325	6,630	252,803	52,446	7,451	6,816	82,613	10,317	159,643	63.1	93,160	66,261	—20,719	—62,691
Southern Pacific	June	9,082	6,785,462	1,594,733	9,253,779	737,022	1,499,666	276,320	2,961,091	505,853	6,138,041	66.3	3,115,738	2,097,627	1,631,109	1,212,282
	6 mos.	9,093	31,848,656	7,296,668	43,459,529	4,443,785	8,298,467	1,579,825	16,732,273	3,257,651	35,191,546	81.0	8,267,983	2,388,834	599,841	2,260,625
Southern Pacific Steamship Lines	June	.....	368,807	16,481	405,449	11,719	99,155	16,798	237,562	21,321	386,555	95.34	18,894	17,803	18,637	—104,373
	6 mos.	.....	1,798,907	63,385	1,960,958	79,925	604,239	96,077	1,424,177	125,021	2,329,439	118.78	—368,481	—377,206	—377,004	—616,514
Texas & New Orleans	June	4,486	1,975,020	219,004	2,484,597	309,057	505,017	112,775	839,593	207,354	1,985,951	79.9	498,646	271,287	58,544	—115,177
	6 mos.	4,525	11,000,404	1,128,369	13,750,633	1,994,635	2,861,838	684,272	5,038,293	1,295,750	11,940,723	86.8	1,809,910	435,458	—706,945	—973,914
Spokane, Portland & Seattle	June	552	375,069	61,268	477,165	35,865	44,834	6,013	138,812	16,315	242,367	50.8	234,798	157,327	141,209	56,900
	6 mos.	552	1,612,469	166,767	1,999,409	197,278	270,338	36,727	731,838	106,845	1,347,425	67.4	651,984	190,621	143,601	69,092
Tennessee Central	June	287	130,012	3,719	141,976	24,630	22,733	4,528	48,647	9,108	109,580	77.2	32,396	29,810	16,824	8,193
	6 mos.	291	831,685	20,034	903,348	157,788	139,232	29,630	316,008	60,305	702,710	77.8	200,638	184,158	93,924	68,884
Terminal R. R. Assn. of St. Louis	June	55	.....	.....	582,440	36,697	24,296	2,991	210,311	14,004	290,468	49.9	291,972	212,638	274,796	107,746
	6 mos.	55	.....	.....	2,919,304	220,963	157,861	18,834	1,254,101	96,594	1,761,880	60.4	1,157,424	657,795	1,037,133	625,075
Texas & Pacific	June	1,950	1,495,864	159,639	1,844,034	154,588	292,521	61,043	527,194	104,979	1,154,066	62.6	689,968	587,824	460,474	341,927
	6 mos.	1,950	7,822,204	813,828	9,727,199	980,998	1,765,249	362,266	3,098,989	627,359	6,919,143	71.1	2,808,056	2,195,802	1,484,392	1,347,061
Texas Mexican	June	162	39,945	430	45,113	10,833	14,064	2,607	22,723	7,052	57,224	126.8	—12,111	—16,659	—20,576	—18,082
	6 mos.	162	289,520	3,440	321,037	57,080	75,877	17,230	151,010	40,401	339,736	105.8	—18,699	—46,246	—65,390	24,038
Toledo, Peoria & Western	June	239	148,356	14	150,860	43,266	11,580	14,338	38,277	9,627	117,088	77.6	33,772	29,568	17,322	5,575
	6 mos.	239	735,820	154	746,651	185,511	60,704	82,236	207,878	46,920	583,249	78.1	163,402	140,698	79,013	31,879
Toledo Terminal	June	28	.....	.....	66,880	3,267	6,934	439	24,682	3,460	38,782	58.0	28,098	21,175	35,077	7,621
	6 mos.	28	.....	.....	367,138	24,564	49,448	2,701	165,610	24,115	266,437	72.6	100,701	56,121	131,112	91,854
Union Railroad of Pennsylvania	June	45	.....	.....	323,573	44,133	84,336	113	114,508	13,634	256,724	79.3	66,849	60,845	107,988	—49,826
	6 mos.	45	.....	.....	956,108	181,961	521,357	705	472,591	83,396	1,260,010	131.8	—303,902	—343,571	—227,008	—372,987
Union Pacific	June	3,767	4,582,537	813,878	5,950,784	518,992	1,066,479	116,745	1,523,077	248,884	3,537,884	59.5	2,412,900	1,831,672	1,614,129	757,053
	6 mos.	3,767	21,936,863	2,429,092	26,967,643	2,075,901	5,609,625	643,284	8,413,024	1,593,737	18,645,417	69.1	8,322,226	5,988,445	5,032,569	4,607,192
Oregon Short Line	June	2,504	1,328,764	212,622	1,673,116	201,069	214,504	29,704	496,888	85,954	1,043,312	62.4	629,804	383,654	324,827	5,375
	6 mos.	2,504	7,331,246	622,550	8,682,020	992,684	1,279,625	190,998	2,973,812	530,620	6,118,442	70.5	2,563,578	1,084,729	638,636	490,332
Oregon-Wash. R. R. & Nav. Co.	June	2,316	872,992	141,389	1,162,139	173,403	150,628	47,847	442,560	80,263	900,353	77.5	261,786	111,570	10,936	—140,136
	6 mos.	2,316	4,530,047	469,222	5,690,245	919,290	847,158	284,310	2,493,455	506,132	5,076,333	89.2	613,912	—187,484	—780,957	—1,064,793
Los Angeles & Salt Lake	June	1,248	883,608	199,890	1,186,305	155,706	168,012	45,063	321,543	52,872	770,006	64.9	416,299	282,267	180,170	268,518
	6 mos.	1,249	5,218,428	664,442	6,405,094	837,343	1,003,701	259,116	2,038,173	343,712	4,617,118	72.1	1,787,976	1,082,817	376,363	713,779
St. Joseph & Grand Island	June	258	205,941	8,471	222,602	37,235	24,288	1,701	63,664	11,398	138,786	62.3	83,816	73,519	51,235	—2,109
	6 mos.	258	1,069,185	16,596	1,129,722	134,543	169,463	12,962	355,215	70,294	743,577	65.8	386,145	324,289	203,363	155,533
Utah	June	111	34,784	.....	34,863	8,651	16,576	481	11,084	4,789	41,342	118.6	—6,479	—10,411	—19,698	—18,536
	6 mos.	111	504,995	.....	507,972	62,503	127,173	2,867	113,533	29,964	335,801	66.1	172,171	122,038	52,355	47,228
Virginian	June	613	1,088,171	4,704	1,137,074	101,776	191,462	16,586	194,460	30,139	533,675	46.9	603,399	468,386	529,569	255,947
	6 mos.	609	6,032,716	27,135	6,318,494	610,669	1,169,552	96,623	1,193,139	175,501	3,242,633	51.3	3,075,861	2,255,848	2,642,146	2,412,532
Wabash	June	2,480	2,874,192	193,810	3,297,346	459,841	485,783	125,961	1,124,314	87,763	2,291,118	69.5	1,006,228	836,917	511,190	—16,180
	6 mos.	2,480	14,934,087	905,712	17,097,712	2,236,090	2,908,105	790,893	7,006,414	737,935	13,721,219	80.3	3,376,493	2,256,790	267,666	—521,616
Ann Arbor	June	293	230,492	2,365	241,619	26,648	44,467	9,681	96,135	6,578	183,496	75.9	58,123	46,043	27,600	—31,223
	6 mos.	293	1,290,404	10,582	1,342,122	149,579	259,165	64,510	607,523	56,732	1,137,635	84.8	204,487	111,692	4,509	—6,040
Western Maryland	June	891	926,551	8,039	965,877	155,813	160,357	30,678	240,066	40,121	627,886	65.0	337,991	267,991	281,867	172,210
	6 mos.	891	5,240,067	35,961	5,442,147	669,345	937,010	187,967	1,444,689	214,508	3,467,738	63.7	1,974,409	1,554,409	1,602,539	1,624,675
Western Pacific	June	1,212	844,193	63,154	976,420	164,222	238,355	57,866	324,025	35,544	818,610	83.8	157,810	78,835	57,391	—112,343
	6 mos.	1,211	4,114,941	128,837	4,443,247	718,774	987,318	330,294	1,838,201	211,083	4,150,890	93.4	292,357	—180,204	—216,260	—546,153
Wheeling & Lake Erie	June	511	957,153	1,273	1,007,078	100,544	247,548	26,221	250,543	25,221	650,066	64.6	357,012	227,819	214,787	—17,949
	6 mos.	511	4,246,911	8,725	4,489,616	450,415	1,245,938	157,036	1,317,034	152,813	3,323,159	74.0	1,166,457	661,359	541,929	—56,878
Wichita Falls & Southern	June	203	46,526	22	48,981	8,828	7,639	1,540	11,828	3,093	32,928	67.23	16,053	13,343	9,903	10,211
	6 mos.	203	248,458	152	258,537	51,777	41,638	9,890	73,905	18,534	195,744	75.71	62,793	46,042	26,124	22,369







Better Control of Production Costs

GOOD castings are just as imperative as good machine tools and good operators if you wish to keep production costs to a steady minimum level.

Castings made of HUNT-SPILLER *Air Furnace* GUN IRON possess the uniform qualities which permit the use of maximum cutting speeds and feeds.

This uniformity is due to a scientific foundry control which also makes possible manufacture of all HSGI Castings very close to finished sizes. Less stock has to be removed — less time is required for each job.

Result: Better control of production and lower machining costs as well as big savings after application.

HSGI
Reg. U. S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Parts Finished For Application

Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER MFG. CORPORATION
J. G. Platt, Pres. & Gen. Mgr. V. W. Ellet, Vice-President.

Office & Works
383 Dorchester Ave. South Boston, 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 997 Aqueduct St., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER GUN IRON

Air Furnace

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1933—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures	Equipment	Traffic	Transportation	General	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income	Net ry. operating income, 1932
Georgia Southern & Florida	June	397	$115,777	$12,997	$144,477	$29,090	$33,198	$2,209	$65,930	$2,205	$134,178	92.9	$10,299	—$2,197	—$10,763	$4,555
	6 mos.	397	609,690	120,333	836,345	147,388	198,510	11,795	307,272	13,606	691,253	82.7	145,092	56,915	16,724	45,240
New Orleans & Northeastern	June	204	145,207	16,850	174,231	23,660	35,417	5,296	58,758	8,717	133,068	76.4	41,163	10,433	—8,178	—50,995
	6 mos.	204	706,403	81,511	857,070	145,915	225,730	31,565	346,806	50,757	808,244	94.3	48,826	—135,652	—227,227	—240,474
Northern Alabama	June	99	43,498	1,324	46,395	8,573	1,227	1,079	13,993	1,648	26,522	57.2	19,873	15,409	2,515	—17,523
	6 mos.	99	237,325	6,630	252,803	52,446	7,451	6,816	82,613	10,317	159,643	63.1	93,160	66,261	—20,719	—62,691
Southern Pacific	June	9,082	6,785,462	1,594,733	9,253,779	737,022	1,499,666	276,320	2,961,091	505,853	6,138,041	66.3	3,115,738	2,097,627	1,631,109	1,212,282
	6 mos.	9,093	31,848,656	7,296,668	43,459,529	4,443,785	8,298,467	1,579,825	16,732,273	3,257,651	35,191,546	81.0	8,267,983	2,388,834	599,841	2,260,625
Southern Pacific Steamship Lines	June	.....	368,807	16,481	405,449	11,719	99,155	16,798	237,562	21,321	386,555	95.34	18,894	17,803	18,637	—104,373
	6 mos.	.....	1,798,907	63,385	1,960,958	79,925	604,239	96,077	1,424,177	125,021	2,329,439	118.78	—368,481	—377,206	—377,004	—616,514
Texas & New Orleans	June	4,486	1,975,020	219,004	2,484,597	309,057	505,017	112,775	839,593	207,354	1,985,951	79.9	498,646	271,287	58,544	—115,177
	6 mos.	4,525	11,000,404	1,128,369	13,750,633	1,994,635	2,861,838	684,272	5,038,293	1,295,750	11,940,723	86.8	1,809,910	435,458	—706,945	—973,914
Spokane, Portland & Seattle	June	552	375,069	61,268	477,165	35,865	44,834	6,013	138,812	16,315	242,367	50.8	234,798	157,327	141,209	56,900
	6 mos.	552	1,612,469	166,767	1,999,409	197,278	270,338	36,727	731,838	106,845	1,347,425	67.4	651,984	190,621	143,601	69,092
Tennessee Central	June	287	130,012	3,719	141,976	24,630	22,733	4,528	48,647	9,108	109,580	77.2	32,396	29,810	16,824	8,193
	6 mos.	291	831,685	20,034	903,348	157,788	139,232	29,630	316,008	60,305	702,710	77.8	200,638	184,158	93,924	68,884
Terminal R. R. Assn. of St. Louis	June	55	.....	.....	582,440	36,697	24,296	2,991	210,311	14,004	290,468	49.9	291,972	212,638	274,796	107,746
	6 mos.	55	.....	.....	2,919,304	220,963	157,861	18,834	1,254,101	96,594	1,761,880	60.4	1,157,424	657,795	1,037,133	625,075
Texas & Pacific	June	1,950	1,495,864	159,639	1,844,034	154,588	292,521	61,043	527,194	104,979	1,154,066	62.6	689,968	587,824	460,474	341,927
	6 mos.	1,950	7,822,204	813,828	9,727,199	980,998	1,765,249	362,266	3,098,989	627,359	6,919,143	71.1	2,808,056	2,195,802	1,484,392	1,347,061
Texas Mexican	June	162	39,945	430	45,113	10,833	14,064	2,607	22,723	7,052	57,224	126.8	—12,111	—16,659	—20,576	—18,082
	6 mos.	162	289,520	3,440	321,037	57,080	75,877	17,230	151,010	40,401	339,736	105.8	—18,699	—46,246	—65,390	24,038
Toledo, Peoria & Western	June	239	148,356	14	150,860	43,266	11,580	14,338	38,277	9,627	117,088	77.6	33,772	29,568	17,322	5,575
	6 mos.	239	735,820	154	746,651	185,511	60,704	82,236	207,878	46,920	583,249	78.1	163,402	140,698	79,013	31,879
Toledo Terminal	June	28	.....	.....	66,880	3,267	6,934	439	24,682	3,460	38,782	58.0	28,098	21,175	35,077	7,621
	6 mos.	28	.....	.....	367,138	24,564	49,448	2,701	165,610	24,115	266,437	72.6	100,701	56,121	131,112	91,854
Union Railroad of Pennsylvania	June	45	.....	.....	323,573	44,133	84,336	113	114,508	13,634	256,724	79.3	66,849	60,845	107,988	—49,826
	6 mos.	45	.....	.....	956,108	181,961	521,357	705	472,591	83,396	1,260,010	131.8	—303,902	—343,571	—227,008	—372,987
Union Pacific	June	3,767	4,582,537	813,878	5,950,784	518,992	1,066,479	116,745	1,523,077	248,884	3,537,884	59.5	2,412,900	1,831,672	1,614,129	757,053
	6 mos.	3,767	21,936,863	2,429,092	26,967,643	2,075,901	5,609,625	643,284	8,413,024	1,593,737	18,645,417	69.1	8,322,226	5,988,445	5,032,569	4,607,192
Oregon Short Line	June	2,504	1,328,764	212,622	1,673,116	201,069	214,504	29,704	496,888	85,954	1,043,312	62.4	629,804	383,654	324,827	5,375
	6 mos.	2,504	7,331,246	622,550	8,682,020	992,684	1,279,625	190,998	2,973,812	530,620	6,118,442	70.5	2,563,578	1,084,729	638,636	490,332
Oregon-Wash. R. R. & Nav. Co.	June	2,316	872,992	141,389	1,162,139	173,403	150,628	47,847	442,560	80,263	900,353	77.5	261,786	111,570	10,936	—140,136
	6 mos.	2,316	4,530,047	469,222	5,690,245	919,290	847,158	284,310	2,493,455	506,132	5,076,333	89.2	613,912	—187,484	—780,957	—1,064,793
Los Angeles & Salt Lake	June	1,248	883,608	199,890	1,186,305	155,706	168,012	45,063	321,543	52,872	770,006	64.9	416,299	282,267	180,170	268,518
	6 mos.	1,249	5,218,428	664,442	6,405,094	837,343	1,003,701	259,116	2,038,173	343,712	4,617,118	72.1	1,787,976	1,082,817	376,363	713,779
St. Joseph & Grand Island	June	258	205,941	8,471	222,602	37,235	24,288	1,701	63,664	11,398	138,786	62.3	83,816	73,519	51,235	—2,109
	6 mos.	258	1,069,185	16,596	1,129,722	134,543	169,463	12,962	355,215	70,294	743,577	65.8	386,145	324,289	203,363	155,533
Utah	June	111	34,784	.....	34,863	8,651	16,576	481	11,084	4,789	41,342	118.6	—6,479	—10,411	—19,698	—18,536
	6 mos.	111	504,995	.....	507,972	62,503	127,173	2,867	113,533	29,964	335,801	66.1	172,171	122,038	52,355	47,228
Virginian	June	613	1,088,171	4,704	1,137,074	101,776	191,462	16,586	194,460	30,139	533,675	46.9	603,399	468,386	529,569	255,947
	6 mos.	609	6,032,716	27,135	6,318,494	610,669	1,169,552	96,623	1,193,139	175,501	3,242,633	51.3	3,075,861	2,255,848	2,642,146	2,412,532
Wabash	June	2,480	2,874,192	193,810	3,297,346	459,841	485,783	125,961	1,124,314	87,763	2,291,118	69.5	1,006,228	836,917	511,190	—16,180
	6 mos.	2,480	14,934,087	905,712	17,097,712	2,236,090	2,908,105	790,893	7,006,414	737,935	13,721,219	80.3	3,376,493	2,256,790	267,666	—521,616
Ann Arbor	June	293	230,492	2,365	241,619	26,648	44,467	9,681	96,135	6,578	183,496	75.9	58,123	46,043	27,600	—31,223
	6 mos.	293	1,290,404	10,582	1,342,122	149,579	259,165	64,510	607,523	56,732	1,137,635	84.8	204,487	111,692	4,509	—6,040
Western Maryland	June	891	926,551	8,039	965,877	155,813	160,357	30,678	240,066	40,121	627,886	65.0	337,991	267,991	281,867	172,210
	6 mos.	891	5,240,067	35,961	5,442,147	669,345	937,010	187,967	1,444,689	214,508	3,467,738	63.7	1,974,409	1,554,409	1,602,539	1,624,675
Western Pacific	June	1,212	844,193	63,154	976,420	164,222	238,355	57,866	324,025	35,544	818,610	83.8	157,810	78,835	57,391	—112,343
	6 mos.	1,211	4,114,941	128,837	4,443,247	718,774	987,318	330,294	1,838,201	211,083	4,150,890	93.4	292,357	—180,204	—216,260	—546,153
Wheeling & Lake Erie	June	511	957,153	1,273	1,007,078	100,544	247,548	26,221	250,543	25,221	650,066	64.6	357,012	227,819	214,787	—17,949
	6 mos.	511	4,246,911	8,725	4,489,616	450,415	1,245,938	157,036	1,317,034	152,813	3,323,159	74.0	1,166,457	661,359	541,929	—56,878
Wichita Falls & Southern	June	203	46,526	22	48,981	8,828	7,639	1,540	11,828	3,093	32,928	67.23	16,053	13,343	9,903	10,211
	6 mos.	203	248,458	152	258,537	51,777	41,638	9,890	73,905	18,534	195,744	75.71	62,793	46,042	26,124	22,369

ILLINOIS
TRACK MATERIALS

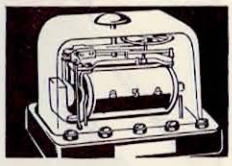
Manufactured and Inspected to assure Uniform Quality...

Illinois Steel Company
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
208 South La Salle Street, Chicago, Ill.

SPIKES · BOLTS · ANGLE BARS · TIE PLATES

these six

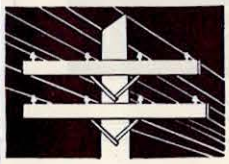
Train Dispatching Equipment— Among Western Electric's latest contributions to improved train dispatching are... New Compact Selector Key... Jack Box... Selector.

1 

2 *Train Dispatching Equipment* (Continued) — Balanced Armature Type Magnetic Loud Speaker combines clear reproduction with compact size—handy mounting.

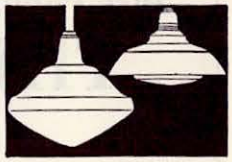
Wire and Cable— For vital circuits — dependable wire and cable. A convenient source for all kinds — including Western Electric Lead Covered Cable.

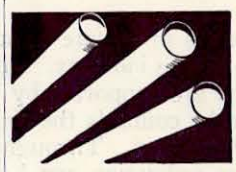
3



4 *Line Construction Materials*— From pliers to poles, construction materials of all kinds may be ordered, shipped, and assembled economically and conveniently.

Lamps and Lighting Equipment — A complete selection of quality lamps, fixtures, and glassware is readily available from Graybar. Meets exacting railroad needs.

5 



6 *Underground Material*— Every type of conduit for railroad use — also conduit fittings, tools, transformers, accessories. No need to seek any further than the nearest Graybar warehouse.

...and 60,000 other quality electrical items for railroads—

Graybar

OFFICES IN 73 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BLDG., N.Y.

Have You Changed Your Address?

Notice of change of address of subscribers should reach the office of Railway Age, 30 Church St., New York, ten days in advance to insure delivery of the following issue to new address. In sending notification of change always include the old address as well as the new.

Name.....

Old Address.....

New Address.....

.....

.....

Position.....Company.....

THE CAREFUL INVESTOR JUDGES A SECURITY
BY THE HISTORY OF ITS PERFORMANCE
KERITE
IN THREE-QUARTERS OF A CENTURY OF
CONTINUOUS PRODUCTION HAS ESTABLISHED
A RECORD OF PERFORMANCE
THAT IS UNEQUALLED IN THE HISTORY OF
INSULATED WIRES AND CABLES
THE KERITE INSULATED WIRE & CABLE COMPANY INC
NEW YORK CHICAGO SAN FRANCISCO

MAGNUS COMPANY

(INCORPORATED)

Journal Bearings

AND

Bronze Engine Castings

New York Chicago

Just Published

THE TRANSPORTATION CRISIS

By G. Lloyd Wilson, Ph.D.

Professor of Transportation, University of Pennsylvania

Viewing transportation as in a state of chaos, the author, a traffic expert, proceeds to analyze each major branch of the industry. He holds no brief for either new or old forms of transport and his statements are supported by statistical records. Having considered the facts behind the present situation he counsels the immediate formulation of sound policy for the regulation of all types of transport. Through an enlarged Interstate Commerce Commission he believes that scientific co-ordination can be achieved and regulated so that each type of transportation agency can serve the public adequately for reasonable compensation.

TEN DAYS' FREE EXAMINATION

SIMMONS-BOARDMAN PUBLISHING CO.
30 Church St., New York, N. Y.

Send me a copy of "The Transportation Crisis" on ten days' approval. I will either remit the list price of $2.50 or return the book at the end of that time.

Name .....

Address .....

City ..... State .....

Company ..... Position .....

(This offer applies only to Retail purchasers in the United States and Canada) R. A. 8-12-33

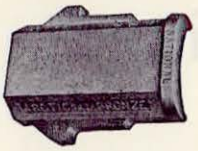
Chapter Headings

The Transportation Revolution—An Inventory of Transportation Facilities—Railroad Transportation—Coastwise Shipping—The Intercoastal Trade—Inland Waterway Transportation—Petroleum Pipe Line Transportation—The Transportation of Natural Gas—Motor Transportation—Motor and Railroad Competition for Freight Traffic—The Cost of Highway Transportation—Electric Railway Passenger Transportation—Electric Railway Freight Transportation—Air Transportation—The Railroad Crisis and Investments—An Experiment in Salvaging Railroad Credit—Are Railroad Freight Rate Structures Obsolete?—Is the Railroad Regulation Policy Antiquated?—Store-Door Freight Service—A Planned Transportation System—Index.

335 pages, 6 x 8¼ inches, cloth, $2.50

"Arctic" #36 BRONZE
CAR JOURNAL BEARINGS

LONG WEAR



NO TROUBLE

NATIONAL BEARING METALS CORP.
ST. LOUIS, MO.

New York, N. Y. Jersey City, N. J. Pittsburgh, Pa. Meadville, Pa. Portsmouth, Va. St. Paul, Minn.
2

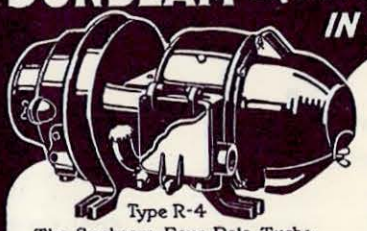
VAPOR Products

STEAM COUPLERS ARA Standard
VAPOR SYSTEM Thermostatic Control
FLEXIBLE CONDUITS in place of Steam Hose
CONTROLS for Air Conditioning

VAPOR CAR HEATING CO., Inc.
RAILWAY EXCHANGE, CHICAGO

BARBER LATERAL - MOTION DEVICE
1,300,000 cars equipped
ROLLER SIDE-BEARINGS
STANDARD CAR TRUCK CO.
McCORMICK BUILDING CHICAGO

SUNBEAM EQUIPMENT FOR SAFETY IN TRAIN CONTROL



Type R-4

The Sunbeam Four-Pole Turbo-Generator has a wave-wound armature and four brushes that insure freedom from voltage ripple. A responsive governor maintains constant speed and voltage

SUNBEAM Train Control Turbo-Generators operate at constant speed, insuring close voltage regulation. Designed especially to meet the critical demands of train control, they effect great economy in steam and maintenance costs. Their performance in actual use demonstrates their reliability over long periods of service. Write for further details.

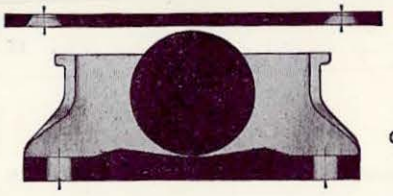
SUNBEAM ELECTRIC MFG. CO.
NEW YORK SAN FRANCISCO PHILADELPHIA EVANSVILLE, INDIANA, U. S. A. DENVER RICHMOND INDIANAPOLIS

WINE RAILWAY APPLIANCE CO.
TOLEDO, OHIO

Details of our products appear in following issues of Railway Age during 1932

January 16—March 19—May 21—August 13—September 17—November 19—or Railway Mechanical Engineer.

See book advertisement on page 16



STUCKI SIDE BEARINGS
Manufactured by
A. Stucki Co.
Oliver Bldg., Pittsburgh, Pa.
Canadian Representative:
The Holden Co., Ltd.,
Montreal, Can.

EDGEWATER STEEL COMPANY
PITTSBURGH, PA.

Details of our products appeared in the following issues of Railway Age during 1931, 1932 & 1933:

1931—May 16—June 13—July 4—Aug. 1, 8, 15, 22, 29—Sept. 5, 12—Oct. 3—Dec. 5.
1932—Jan. 2—March 5—April 2—May 7—June 18, 25—Sept. 3.
1933—Feb'y 4, 25—March 4—April 1—May 6—June 3, 24—July 1, 22.

Pittsburgh Spring & Steel Co.
1417 Farmers Bank Building, Pittsburgh, Pa.
Makers of Elliptic and Spiral SPRINGS of Every Description
Carbon, Vanadium, Silico-Manganese Steels.
Licensed manufacturers under patents for Symington Coil-Elliptic groupings.
Washington, D. C. 324 Union Trust Bldg. New York 2038 Grand Central Terminal Chicago 1411 Fisher Bldg.

GET TOGETHER DEPARTMENT

100 Lb. Relaying Rails
10000 GROSS TONS

ESTABLISHED 1911

QUALITY
SERVICE
PRICE

A R A TYPE A
33 foot lengths
UNIFORM DRILLING
100% ANGLE BAR JOINTS

E. C. SHERWOOD 7 DEY ST. NEW YORK

POSITION OPEN

SALARIED POSITIONS $2,500 to $25,000—This thoroughly organized advertising service of 23 years' recognized standing and reputation carries on preliminary negotiations for positions of the caliber indicated, through a procedure individualized to each client's personal requirements. Several weeks are required to negotiate and each individual must finance the moderate cost of his own campaign. Retaining fee protected by a refund provision as stipulated in our agreement. Identity is covered and, if employed, present position protected. If you have actually earned over $2,500, send only name and address for details.

R. W. BIXBY, Inc.
102 Delward Bldg., Buffalo, N. Y.

EDUCATIONAL

THE Railway Educational Bureau, Omaha, Neb., offers a distinctive education service for Supervisors and other employes. Write for FREE Special Bulletin.

Index to Advertisers

August 12, 1933

A

American Arch Co., Inc. 11
American Locomotive Co. 12
American Steel Foundries 6

B

Baldwin Locomotive Works, The 2
Bethlehem Steel Company 4
Bixby, Inc., R. W. 17
Byers Company, A. M. ..... Front Cover

C

Classified Advertisements 17

E

Edgewater Steel Co. 17

F

Franklin Railway Supply Co., Inc. 10

G

General Railway Signal Co. 20
General Steel Castings Corp. 3
Get Together Department 17
Graybar Electric Company 15

H

Harbison-Walker Refractories Co. 11
Hunt-Spiller Manufacturing Corp. 14
Hutchins Car Roofing Co. 8

I

Illinois Steel Company 15

K

Kerite Insulated Wire & Cable Co. 16

L

Lima Locomotive Works, Inc. 9

M

Magnus Company, Inc. 16

N

National Bearing Metals Corp. 17

P

Pittsburgh Spring & Steel Co. 17
Professional Directory 17

R

Railway Educational Bureau, The 17
Republic Steel Corp. 13

S

Sherwood, E. C. 17
Simmons-Boardman Publishing Co. 16
Standard Car Truck Co. 17
Stucki Company, A. 17
Sunbeam Electric Company 17

U

Union Switch & Signal Co. 20

V

Vapor Car Heating Co. 17

W

Westinghouse Air Brake Co. 19
Westinghouse Electric & Manufacturing Co. 7
Wine Railway Appliance Co. 17

"Arctic" #36 BRONZE
CAR JOURNAL BEARINGS

LONG WEAR

NO TROUBLE

NATIONAL BEARING METALS CORP.
ST. LOUIS, MO.

New York, N. Y.
Jersey City, N. J.
Pittsburgh, Pa.
Meadville, Pa.
Portsmouth, Va.
St. Paul, Minn.

2

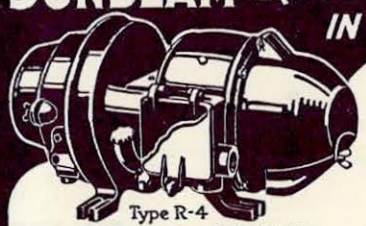
VAPOR Products

STEAM COUPLERS ARA Standard
VAPOR SYSTEM Thermostatic Control
FLEXIBLE CONDUITS in place of Steam Hose
CONTROLS for Air Conditioning

VAPOR CAR HEATING CO., Inc.
RAILWAY EXCHANGE, CHICAGO

BARBER LATERAL - MOTION DEVICE
1,300,000 cars equipped
ROLLER SIDE-BEARINGS
STANDARD CAR TRUCK CO.
McCORMICK BUILDING CHICAGO

SUNBEAM EQUIPMENT FOR SAFETY IN TRAIN CONTROL



Type R-4

The Sunbeam Four-Pole Turbo-Generator has a wave-wound armature and four brushes that insure freedom from voltage ripple. A responsive governor maintains constant speed and voltage

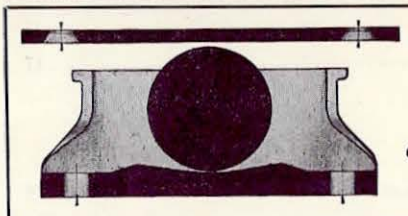
SUNBEAM Train Control Turbo-Generators operate at constant speed, insuring close voltage regulation. Designed especially to meet the critical demands of train control, they effect great economy in steam and maintenance costs. Their performance in actual use demonstrates their reliability over long periods of service. Write for further details.

SUNBEAM ELECTRIC MFG. CO.
NEW YORK SAN FRANCISCO PHILADELPHIA
EVANSVILLE, INDIANA, U. S. A.
DENVER RICHMOND INDIANAPOLIS

WINE RAILWAY APPLIANCE CO.
TOLEDO, OHIO

Details of our products appear in following issues of Railway Age during 1932

January 16—March 19—May 21—August 13—September 17—November 19—or Railway Mechanical Engineer.



STUCKI SIDE BEARINGS
Manufactured by
A. Stucki Co.
Oliver Bldg., Pittsburgh, Pa.
Canadian Representative:
The Holden Co., Ltd.,
Montreal, Can.

See book advertisement on page 16

EDGEWATER STEEL COMPANY
PITTSBURGH, PA.

Details of our products appeared in the following issues of Railway Age during 1931, 1932 & 1933:

1931—May 16—June 13—July 4—Aug. 1, 8, 15, 22, 29—Sept. 5, 12—Oct. 3—Dec. 5.
1932—Jan. 2—March 5—April 2—May 7—June 18, 25—Sept. 3.
1933—Feb'y 4, 25—March 4—April 1—May 6—June 3, 24—July 1, 22.

Pittsburgh Spring & Steel Co.
1417 Farmers Bank Building, Pittsburgh, Pa.
Makers of Elliptic and Spiral SPRINGS of Every Description
Carbon, Vanadium, Silico-Manganese Steels.
Licensed manufacturers under patents for Symington Coil-Elliptic groupings.
Washington, D. C. 324 Union Trust Bldg.
New York 2038 Grand Central Terminal
Chicago 1411 Fisher Bldg.

GET TOGETHER DEPARTMENT

100 Lb. Relaying Rails
10000 GROSS TONS
ESTABLISHED 1911
QUALITY SERVICE PRICE
A R A TYPE A
33 foot lengths
UNIFORM DRILLING
100% ANGLE BAR JOINTS
E. C. SHERWOOD 7 DEY ST. NEW YORK

POSITION OPEN

SALARIED POSITIONS $2,500 to $25,000—This thoroughly organized advertising service of 23 years' recognized standing and reputation carries on preliminary negotiations for positions of the caliber indicated, through a procedure individualized to each client's personal requirements. Several weeks are required to negotiate and each individual must finance the moderate cost of his own campaign. Retaining fee protected by a refund provision as stipulated in our agreement. Identity is covered and, if employed, present position protected. If you have actually earned over $2,500, send only name and address for details.

R. W. BIXBY, Inc.
102 Delward Bldg., Buffalo, N. Y.

EDUCATIONAL

THE Railway Educational Bureau, Omaha, Neb., offers a distinctive education service for Supervisors and other employes. Write for FREE Special Bulletin.

Index to Advertisers

August 12, 1933

A

American Arch Co., Inc. 11
American Locomotive Co. 12
American Steel Foundries 6

B

Baldwin Locomotive Works, The 2
Bethlehem Steel Company 4
Bixby, Inc., R. W. 17
Byers Company, A. M. ..... Front Cover

C

Classified Advertisements 17

E

Edgewater Steel Co. 17

F

Franklin Railway Supply Co., Inc. 10

G

General Railway Signal Co. 20
General Steel Castings Corp. 3
Get Together Department 17
Graybar Electric Company 15

H

Harbison-Walker Refractories Co. 11
Hunt-Spiller Manufacturing Corp. 14
Hutchins Car Roofing Co. 8

I

Illinois Steel Company 15

K

Kerite Insulated Wire & Cable Co. 16

L

Lima Locomotive Works, Inc. 9

M

Magnus Company, Inc. 16

N

National Bearing Metals Corp. 17

P

Pittsburgh Spring & Steel Co. 17
Professional Directory 17

R

Railway Educational Bureau, The 17
Republic Steel Corp. 13

S

Sherwood, E. C. 17
Simmons-Boardman Publishing Co. 16
Standard Car Truck Co. 17
Stucki Company, A. 17
Sunbeam Electric Company 17

U

Union Switch & Signal Co. 20

V

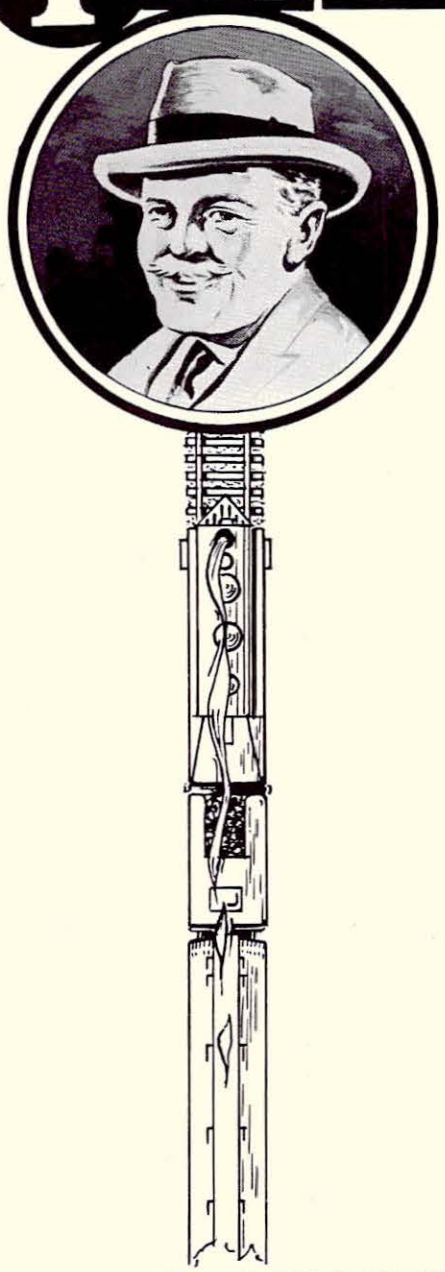
Vapor Car Heating Co. 17

W

Westinghouse Air Brake Co. 19
Westinghouse Electric & Manufacturing Co. 7
Wine Railway Appliance Co. 17

A Quintette of Indirect Advantages of the AIR BRAKE

1 *for the* INDIVIDUAL



BECAUSE the Air Brake has exerted a stimulating effect upon railroad development it has been the indirect means of bringing unusual opportunities and conveniences to the *Individual*—transportation for business, recreation and culture—employment for millions directly, and through related industries—and investments directly or through insurance companies and savings banks. . . . . .

WESTINGHOUSE AIR BRAKE CO.

General Office and Works *Wilmerding, Pa.*

See our exhibit of 60 years progress at the Century of Progress Exposition in Chicago, Booths O and P, Group 19, Mezzanine Floor, Travel and Transport Building.

(1243)

MODERN RAILWAY SIGNAL INSTALLATIONS ARE SELF-LIQUIDATING PROJECTS

CONSOLIDATION OF INTERLOCKING PLANTS

"Consolidation of interlockings is recommended as an economic means to be considered for reducing operating expenses and avoiding the expense of duplicate buildings."

The foregoing is the conclusion of the A. R. A. Signal Section Committee V, as set forth in its report to the Annual Meeting of the Signal Section in May.*

* * *

To consolidate interlockings is to equip one interlocking station so that it may do the work of two or more existing interlocking plants. Such consolidation does away with duplication of effort, equipment and buildings, thereby reducing operating expenses and centralizing the direction of train movements.

Consolidation of Interlocking Plants as Self-Liquidating Projects

	Case A	*Case B*	*Case C*
No. of plants before consolidation	3	2	2
No. of plants after consolidation	1	1	1
Trains per day, average	95	480	180
ANNUAL RETURN ON INVESTMENT over and above 6% interest charges	34%	49%	13%

*See ARA SS Proceedings, May 1933, pp. 135-136

UNION SWITCH & SIGNAL COMPANY
Swissvale, Pennsylvania

GENERAL RAILWAY SIGNAL COMPANY
Rochester, N. Y.

94

Signals Aid Modern Motive Power to Produce More Ton-Miles Per Train-Hour